

## 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.

This manual includes information on the operation of the **Model TS1 Energy Star Thermostat**.

## Table of Contents

	Page Number
Coal-trol Digital Feature Overview	2
For Service and repair	3
Coal-trol Digital Limited Warranty	3
Stoker Stove Terminology	4
Locating the Thermostat	5
Room Over-temperature Cutout	5
Operating Features of the Thermostat	6
Setting Weekday and Weekend Temperature Setbacks	7
Round-robin Temperature/Time/time Display	8
Temporary Temperature Hold	8
Long term Temperature Hold	8
SETUP Menu – Operation	9
SETUP Menu – Specific Stove Brand Settings	10
EXTENDED Menu Operation	11
Coal-trol Digital Model 1 Specifications	12



SYRACUSE • NY

Copyright 2004, 2005 Automation Correct LLC. All rights reserved.  
 Coal-trol Digital™, Pelli-stat™ by Automation Correct LLC  
 All others trademarks by the respective owners.

## Coal-trol Digital™ TS1 Thermostat Feature Overview

The Coal-trol Digital TS1 thermostat, when used with a Coal-trol Digital Control Module comprises a complete control system 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 TS1 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.

Four temperature setbacks per day for weekdays, and four setbacks per day for weekends automatically change the temperature at prescribed times set by the user.

Temporary Setback Hold and Long-term Temperature Hold allow simple override of programmed setback features.

The room High Temperature Limit shuts off the stove if a problem should occur.

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.

Manual 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 and day of the week, 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.

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

The Coal-trol TS1 Thermostat features an alphanumeric 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  
Web: 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 purchase 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

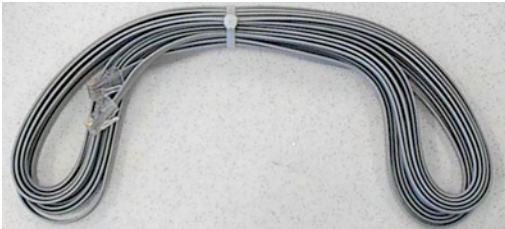
Ash Bin	The container to collect ash produced by burning coal.
Barometric Damper	An air-flow regulator to balance the pressure in a stove or furnace. This helps ensure proper draft conditions.
Bonnet Limit Switch	A temperature switch that shuts down the stove or furnace when a high-limit temperature 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.
Convection Blower	A large fractional 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 or Draft Inducer. <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.

## Locating the Thermostat

The room temperature sensor is located in the Thermostat. For proper operation, the sensor must be exposed to the heat produced by the stove. The preferred mounting locations include: on an inside wall, away from the direct air stream of the convection blower, and away from radiant heat produced by the stove. Note that the Thermostat does not have to be within the same room as the stove. For example, a coal furnace ducted to the return air plenum of an oil or gas furnace will give good results if the Thermostat is mounted next to the oil/gas furnace thermostat.

## Connect Thermostat to Control Module

25 ft. Thermostat Cord



The provided 25ft. cord may be extended with an 8 pin, RJ45 to RJ45 coupler and/or standard computer network cable. The cable must be a 'through' type, not a crossover type. Note: The Coal-trol thermostat and Power Module cannot be connected to computer networks through this cable.

Connect the Thermostat cable to the THERMOSTAT connector on the Control Module and the Connector on the rear of the TS1 Thermostat. Longer cord, up to 100 ft., is available from your dealer or us.

## Room Over-Temperature Cutout

### DISPLAY

### ACTION

The temperature sensor in the thermostat has detected a room temperature above 98°F/ 37°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 STATUS indicator light blinks every second.



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




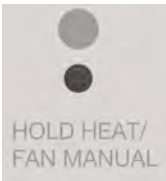


The HI TEMP display may indicate a problem with your stove, chimney, or Coal-trol Digital System.

Press MENU button to Reset.

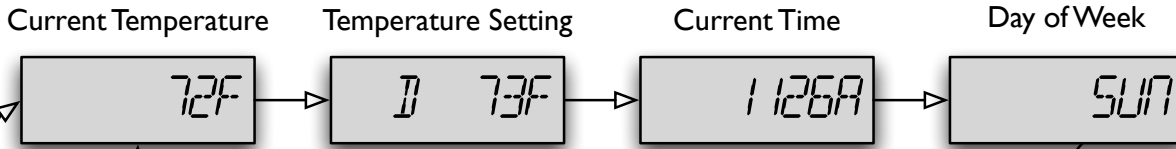
The thermostat will not allow the MENU button to reset the thermostat until the room temperature is less than 97°F/ 35°C

## Operating Features of the Thermostat

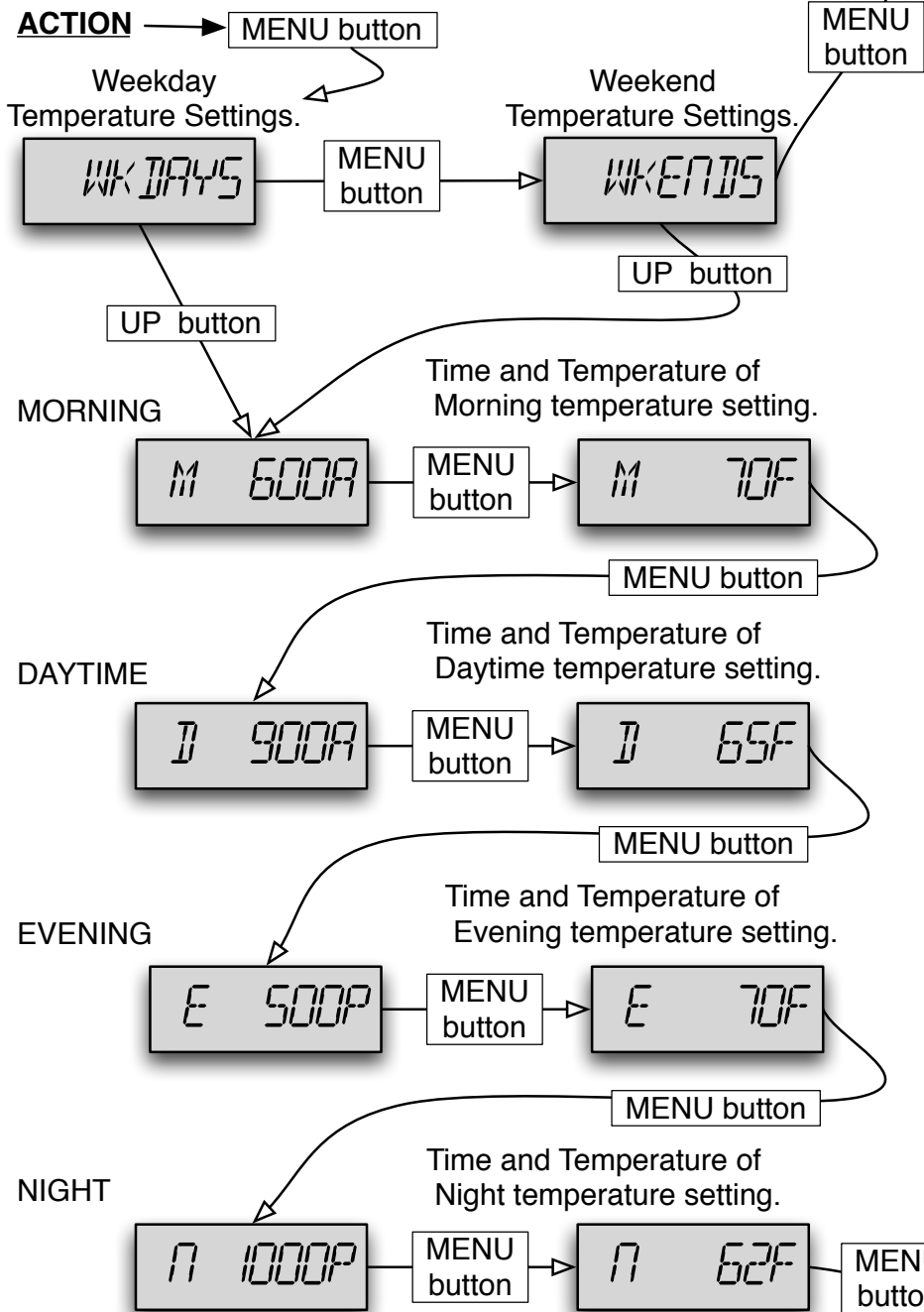
*Purpose of the Buttons and Lights*

 <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>HOLD HEAT/ FAN MANUAL</p>	<p>HOLD HEAT/ FAN MANUAL button –</p> <ol style="list-style-type: none"> <li>1) HOLD HEAT – A momentary press will indefinitely hold the set temperature.</li> <li>2) FAN MANUAL – If the button is pressed for 1 second, manual adjustment of the Convection Fan is enabled. While in the Manual Fan Speed display, momentary presses turn FAN MANUAL ON and OFF.</li> </ol>
 <p>HOLD HEAT</p>	<p>HOLD HEAT Light – LED that when On indicates that HOLD HEAT is ON.</p>
 <p>FAN MANUAL</p>	<p>FAN MANUAL Light – LED that when On indicates Convection Fan is under manual control.</p>

**Round Robin Display and Setting Weekday/Weekend Temperature Setback**



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



**NOTES**

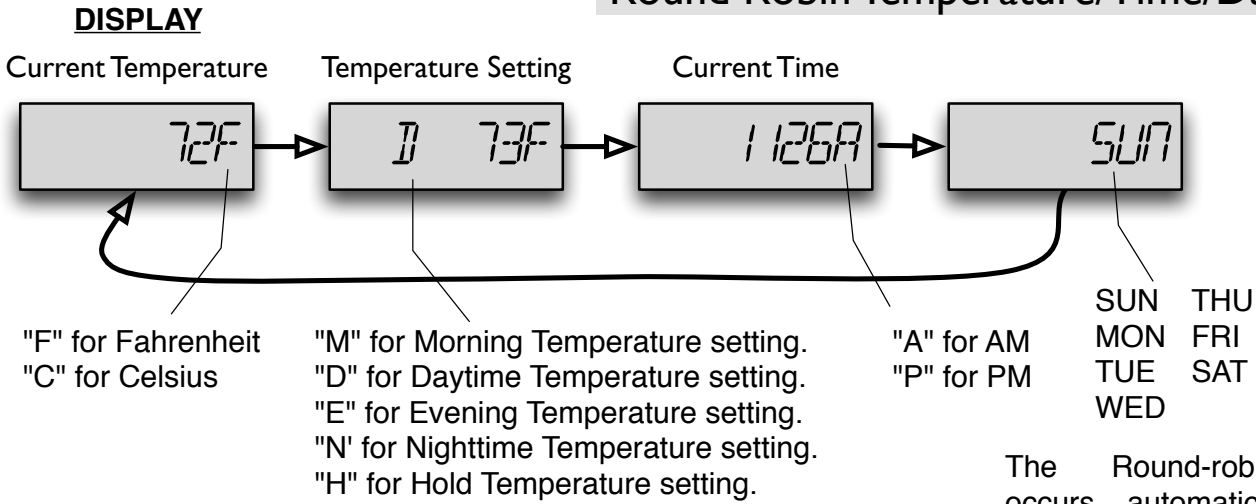
Four setback settings per day are available for Weekdays (Mon-Fri), and four setback settings for Weekends. (Sat/Sun).

Use the UP and DOWN buttons to adjust the values of the time or temperature setting.

Tip: Hold the UP or DOWN buttons in to rapidly change the time or temperature setting.

*Return to WkDAYS or WkENDS display.*

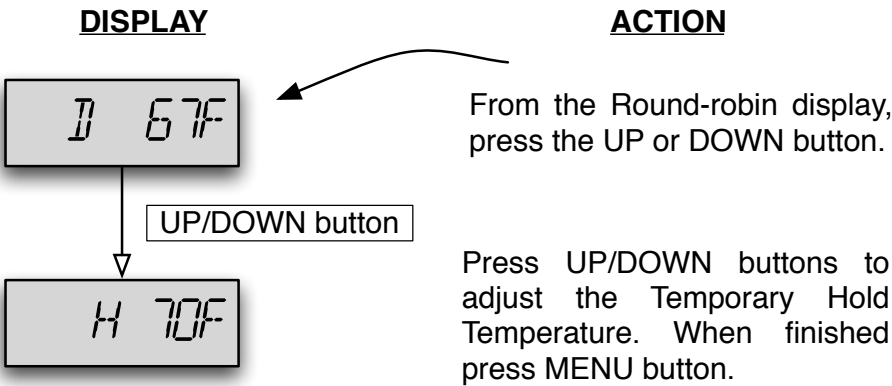
Round Robin Temperature/Time/Day Display



**NOTE**

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

Temporary Temperature Hold



**NOTE**

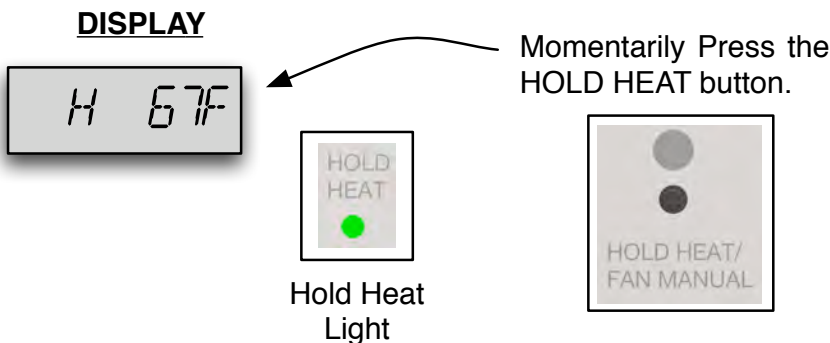
The display will change to the current temperature set point.

In this example, the Daytime setting has been changed from 67°F to 70°F.

The Temporary Hold temperature setting will be overridden when the next programmed setting occurs.

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

Long Term Temperature Hold

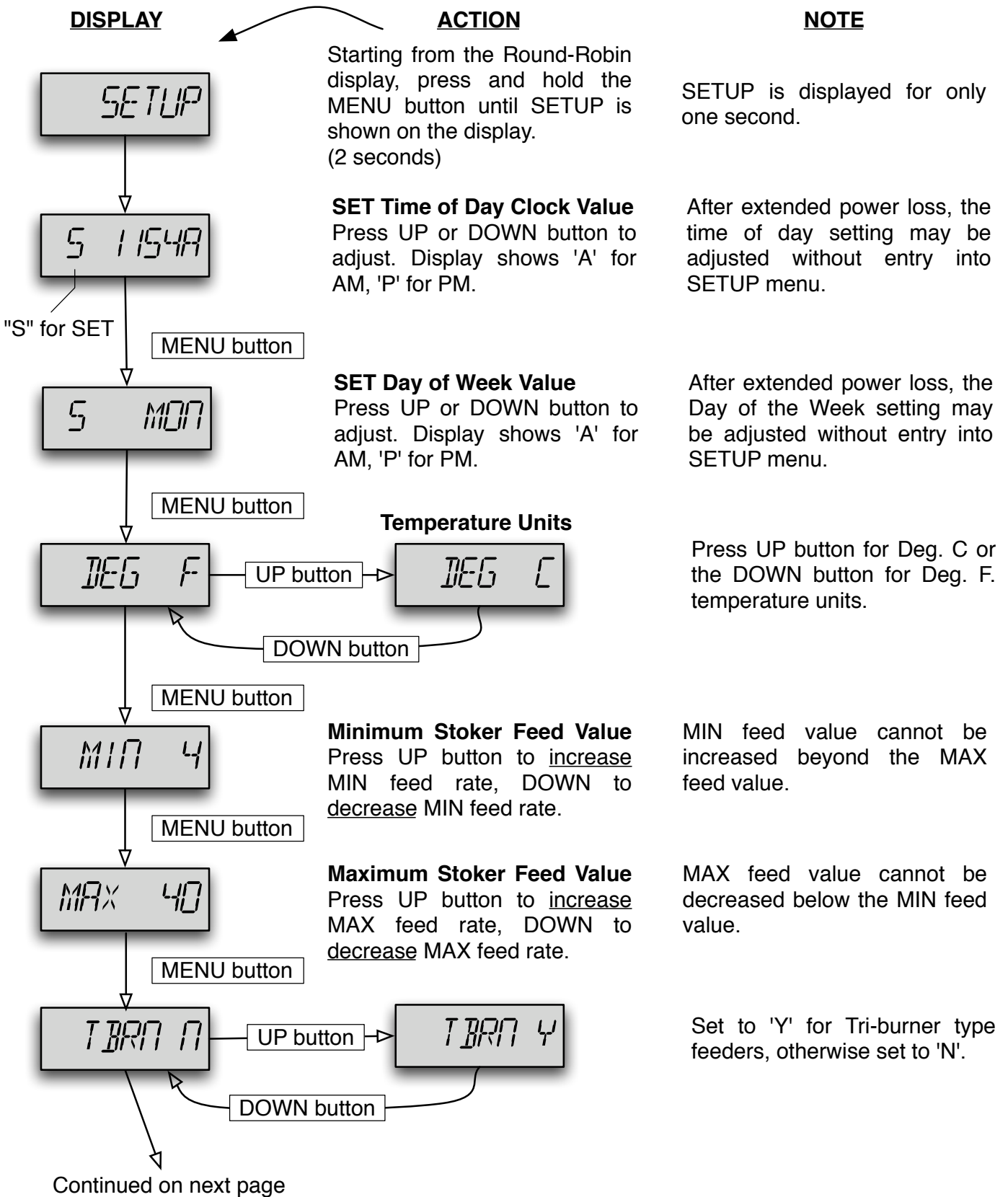


The display will change to the current temperature set point, and the Heat Hold light will turn on. Use the UP/DOWN buttons to change the temperature setting.

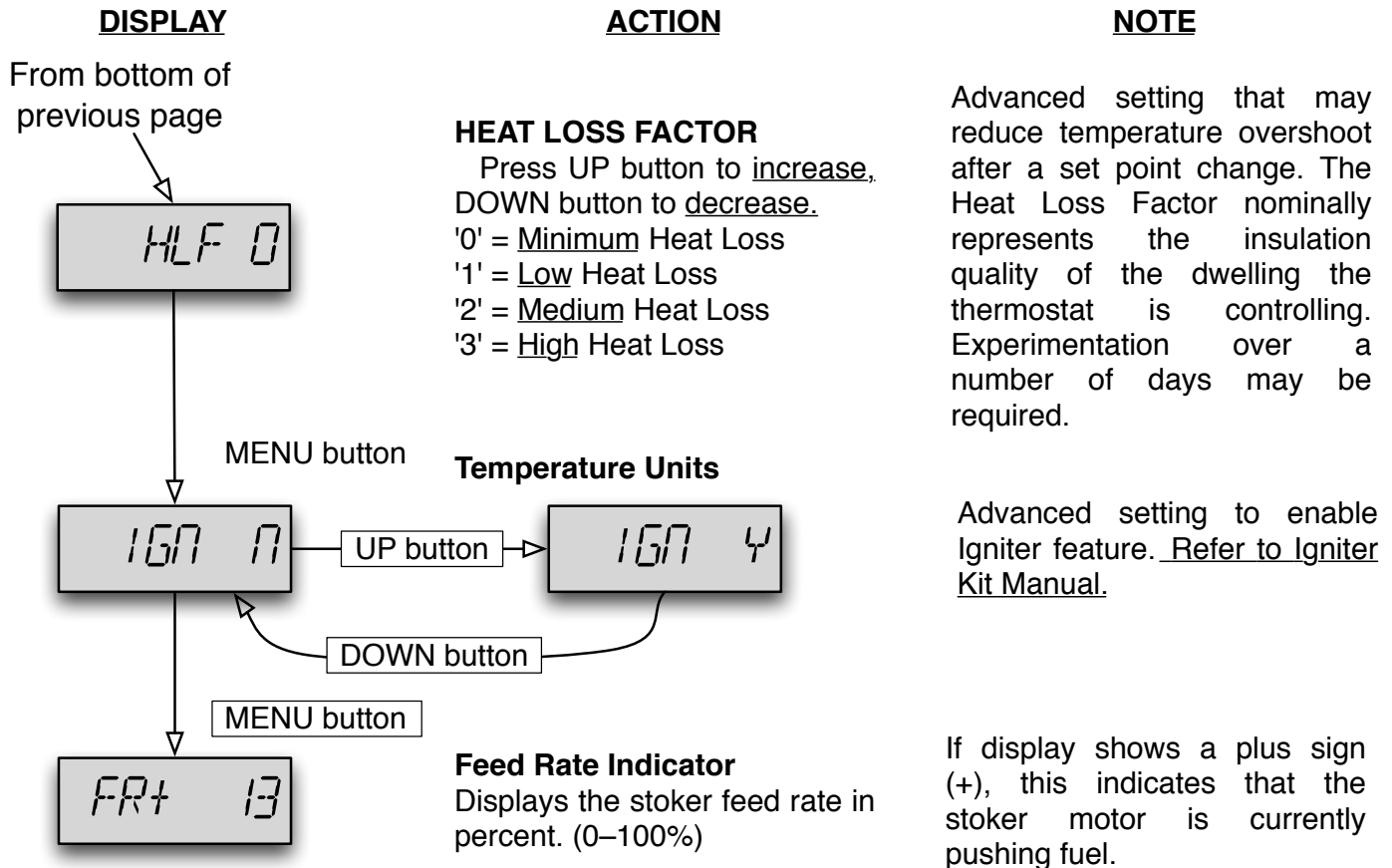


**SETUP  
Menu Operation**

The SETUP menu is for initial setup and advanced features. Under normal operation, these settings need not be adjusted. ALL settings except for Time of Day and Day of Week are retained during power loss.



## SETUP Menu Operation *(Continued from previous page)*



## SETUP Menu - Specific Stove Brand Settings

This table contains the TS1 thermostat settings as shipped from the Factory, and recommended settings for particular stove brands and feeder types.

### IMPORTANT!

All values shown assume that any feeder adjustment screw is set and left on maximum feed rate position.

SETUP	Factory	Leisure Line	Keystoker	Alaska*	Tri-burner/ Reading*	Harman
ITEM	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
S	12:00P	12:00P	12:00P	12:00P	12:00P	12:00P
DEG	F	F	F	F	F	F
MIN	4	6	10	4	45	6
MAX	40	40	75	40	99	99
TBRN	N	N	N	N	Y	N
HLF	0	0	0	0	0	0
IGN	N	N	N	N	N	N

\* Some older Alaska stoves may have Tri-burner type feeders. Refer to the Installation Manual for more information.

Extended Menu Operations

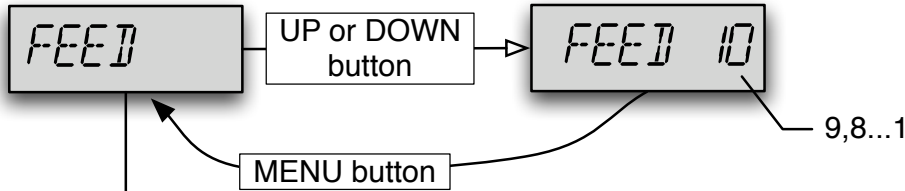
**DISPLAY**

**ACTION**

**NOTE**

Press and hold MENU button for 5 seconds.

Manual Feed Operation

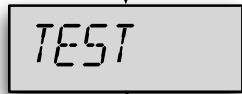


The display counts down from 10, once a minute until complete.

Use One-touch Feed when starting a fire to help fill and even-out the grate.

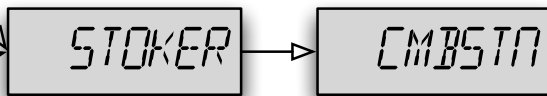
When complete, the thermostat will revert to the Round-robin display.

MENU button

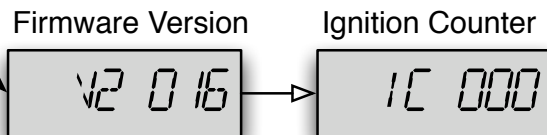
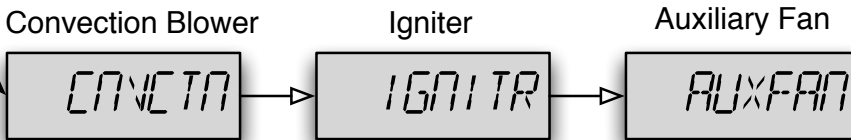


COAL-TROL DIGITAL SYSTEM TEST MODE

UP or DOWN button Stoker Motor Combustion Fan



In turn, each control item is turned on for 5 seconds until MENU button is pressed.



Not all Coal-trol Control Modules have all test items.

**Coal-trol Digital TSI - Specifications**

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

**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)
Construction	ABS Plastic, UL94V-0

**Environmental:**

Operating Temperature	97°F/36°C (Software Temperature Shutdown Limited)
Storage Temperature	40°F to 120°F
Weight	Less than 1 lb./0.45Kg



Syracuse • NY

[www.automationcorrect.com](http://www.automationcorrect.com)

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.