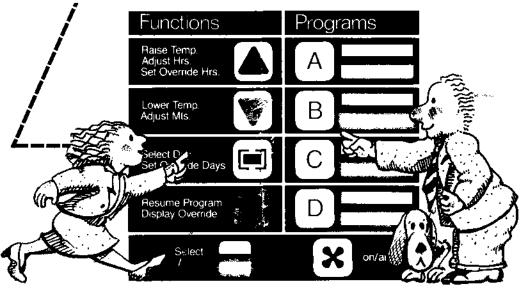
K3W





Programmable Single Stage Heat/Cool Thermostat Model K3W

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Programming instructions

Helpful hints

Please take the few minutes required to read the programming instructions. Experience has shown that users who do read the instructions have no difficulty in programming and using their thermostat. Then find a convenient place to hang your instruction Manual so that you can easily refresh your memory at a later date.

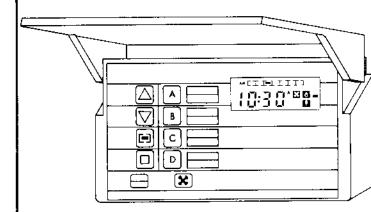
Introduction

Your new thermostat contains a microcomputer that will automatically adjust the temperature of your home or office, up to four times each day, to suit your needs and at the same time save money and energy. It provides comfortable heating or cooling when you need it, and reduces energy expenditure while you are sleeping, or are out of the building, or on vacation. Your thermostat has separate weekend programming - we call it 5-1-1 so that 5 weekdays are the same, and then 2 successive days can each be different.

You can OVERRIDE or SUPERSEDE these settings whenever you wish to vary the schedule. If you have guests during the evening and you do not want the temperature to drop while they are visiting, the touch of a finger to your evening setting (for example 70°F or 21°C) will OVERRIDE your program and keep the temperature at its current setting until after your guests have gone. In addition, you can keep the temperature at a constant setting for any period from one hour up to 31 days using the TIMED OVERRIDE feature, explained on page 9.

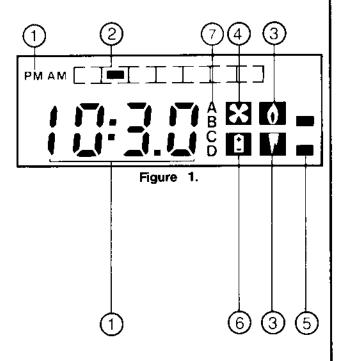
We also recommend that everyone in the family read the instructions and, before installation, (by inserting the battery and following the programming steps) put in a program of their choice. You will soon know how truly simple it is to operate your thermostat.

The thermostat should then be installed. We recommend that a qualified technician install the thermostat because it is very important that it is properly located and all heating and cooling circuits are wired correctly. For INSTALLATION INSTRUCTIONS start on page 11.





Know your thermostat



Display

- The time of day AM or PM and the actual room temperature are displayed alternating at 4 second intervals in normal operation, and the decimal or colon are constantly blinking when temperature and time respectively are shown.
- A set temperature and the time are displayed when programming. Nothing is blinking. The factory setting for all programs is 70°F or 20°C in heating, 74°F or 22°C in cooling and 6:00 AM.
- The duration of timed override is displayed. Nothing blinks. (see timed override page 9).

 Note: decimal point is displayed and not a colon as in a time display.
- Day of week, shows the 'day indicator' at beginning of 5 day program, typically Monday of the 5 days of the week.
- Mode symbols, indicating system in heating (flame) heating and cooling (flame and icicle) cooling (icicle) or off mode (no symbols).
- Fan symbol shows when the fan is in the 'on' continuous mode.
- Indicators showing when heating (top bar) or cooling (bottom bar) is operating.
- Indicates when unit is operating on the battery (thermostat is not installed or the power is off).

 When battery needs to be replaced, the symbol is flashing.
- Indicates the program A,B,C, or D in which the thermostat is operating.

Slide switches

The slide switches 1 to 3 are accessed from the rear of the front unit of the thermostat. They have been preset at the factory for the most frequently used settings and should only be changed by the installer.

However, if you wish to review the options, see page 13, and note that, if you desire a change, switches must be preset before the battery is installed.

Fig. 2 Rear View of Front Unit SLIDE SWITCH RUN-START SWITCH 9 VOLT ALKALINE BATTERY TEMP CALIBRATE

Control buttons

There are Function buttons on the left and Program buttons on the right. Each button has multipleuses.

Raises temperature, adjusts hours, sets override hours



Lowers temperature, adjusts minutes



Push to advance the day indicator to the correct day of week, sets override days when override is displayed

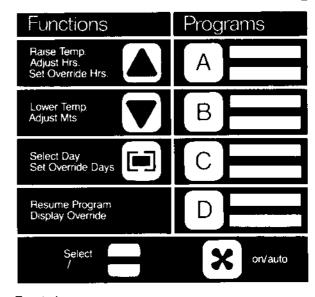


Pressing once will resume program Pressing a second time will display timed override

The program buttons A, B, C and D are used to gain access to programs in order to:



- enter a program
- override a program
- change or check a program



Front view

Selecting your heat/cool system

By consecutively pressing and releasing the



button the following symbols will appear:

COOL

AUTO

HEAT



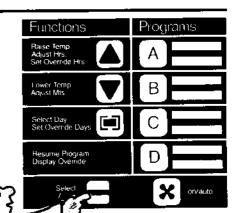
0

With no heat or cool symbols displayed, the system is off.



With the fan button [*], you set the fan to contin

uous operation (ON mode) and the fan symbol is displayed. In the 'auto' mode, no fan symbol will be displayed and the fan operates or cycles as the system demands.





3

Set your personal schedule

Typical residential schedule

Figure 3.

DAYS	PROGR.	HEAT°	COOL	START TIME	AM/PM
Weekdays	Α	10	14	10.00	AU
	В	60	80	8.30	AM
or any 5 consecutive days:	С	10	74	4.30	PM
	D	60	80	11.00	194
6.4 4	Α	1/	15	7.00	AH
Saturday	В	70	74	7.00	AU
or day tollowing 5 consecutive days:	С	70	14	/1.00	411
	D	60	80	7.00	AM
Cundo	A	11_	75	1.00	AU
Sunday EXXXXXI	В	10	14	7.00	AM
or day preceding 5 consecutive days:	0	10	74	7.00	AM
	D	100	80	11.00	PM

Typical office schedule

<u></u>					
DAYS	PROGR.	HEAT°	COOL	START TIME	AM/PM
Weekdays	Α	10	74	7.00	Au
	В	72	76	7.00	AM
or any 5 consecutive days:	С	68	12	7.00	All
	D	60	80	8-00	PM
	Α	70	14	7.00	AN
Şaturday LIIIIII	В	72	76	7.00	AM
or day following 5 consecutive days.	C	68	72	7.00	AM
	D	60	80	7.30	411
Sunday	Α	70	14	7.80	April .
or day preceding 5 consecutive days:	В	72	10	1 to	44
	O	68	72	7.00	~idij
	D	60	80	7.20	44

NOTE:

Put different temperatures in unused programs to provide greater selection, when using timed override.

The first thing to do before programming your thermostat is to determine your own personal comfort levels for each day as to temperature and time. Figure 3 is a typical schedule.

After the temperature has been lowered all night, it would be typical to have the thermostat begin to warm the house at 6:00 AM, if you get up at 7 AM. At 8:30 AM before everyone has left for the day, the thermostat can be set to lower the temperature to save you energy during the day. Before anyone arrives home in the afternoon, the temperature may again be increased to provide comfort for you when you return. Finally, at bedtime, the thermostat again lowers the temperature to save you energy all night.

Figure 4 is a blank form for you. Start with week-days, and write in your personal comfort level, and the time you want the furnace (or air conditioner) to come on in the morning to bring your home to that temperature. It is suggested that you set your desired program times about 1 hour before the time you actually require your home to reach the set temperature. So if you get up at 7 AM, set the furnace to come on at 6 AM.

Then write in the Saturday and Sunday settings.

Fill in this chart to help program your schedule

DAYS	PROGR.	HEAT®	COOL	START TIME	AM/PM
Weekdays	A				
	В				
or any 5 consecutive days:	C				
	D				
P-4	Α .				
Saturday [፲፲፲፲፲	В				
or day following 5 consecutive days:	С				
	D				
Sunday	Α				
or day preceding 5 consecutive days:	œ				
	O	L			
	D				

Figure 4.

Begin programming

Battery installation and startup

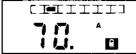
- 1. Separate the thermostat front unit from the mounting plate (page 12 figure 13).
- 2. Install the battery. (Page 13 shows location)
- 3. Operate the RUN-START switch back and forth and leave in RUN position.
- 4. Ensure that the display is flashing once per second as in figure 5. (If it is not, repeat step 3).



Figure 5. Display on start-up

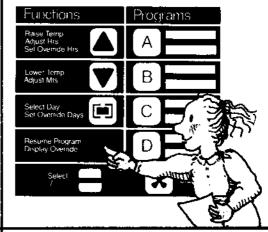
STEP 1.

Press the button and observe the time and temperature alternating every 4 seconds.



Actual temperature

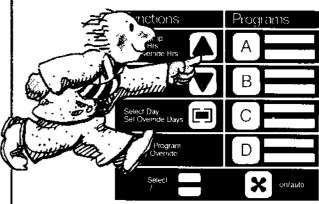
Time

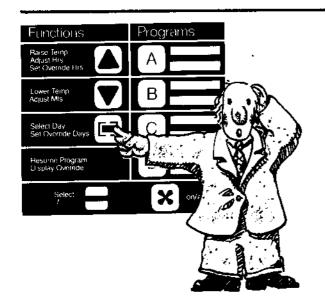


STEP 2. Set correct time of day
When the display is showing time, press and hold
the button, until the hour digits advance to

the correct hour, ensuring that AM/PM indicator is correct. (This button will not affect minutes).

Again when the time is displayed, press and hold button until the minute digits advance to the correct minute. (This button will not affect the hours).





STEP 3. Set correct day of week

Press the button, and advance the day indicator to the correct day of the week. Figure 6 shows the indicator at Monday.

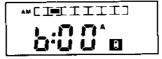
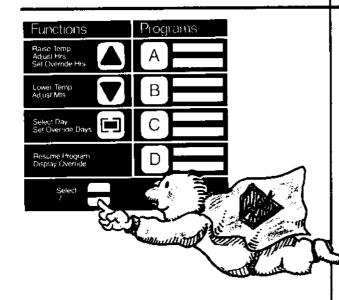


Figure 6.



STEP 4. Select heat/ cool system

By consecutively pressing and releasing the button the following symbols will appear in this order on your display.

COOL

AUTO

HEAT



0

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Select and display your system requirements ie, heat only, cool only, or heating and cooling (auto change over).

NOTE

- The battery symbol will show when power is off.
- Battery symbol will flash to indicate weak battery.
- •When no heat or cool symbol is displayed, the system is off.
- If you have only or only only only displayed, you will program one temperature and the time. If you have both and (auto change over) you will program first heat, then cool, and then time.

STEP 5. Enter your program for 5 weekdays

- (1) If your system selection is cool only, skip substeps (2) to (4) and begin at (5).
- (2) Press and release A . You will observe a display as in figure 7.
- (3) Press to raise or to lower to the desired temperature.

Caution

- Setting below 51 F or 10.5 C shuts system off.
- Setting below 55° F or 12°C may freeze pipes.
- (4) If your system selection is heat only, skip substeps (5) and (6) and proceed to (7).
- (5) Press and release A . You will observe the display as in figure 8.
- (6) Press to raise or to lower to the desired temperature.
- (7) Press and release A . You will observe the display as in figure 9.
- (8) Press to advance the hours and to advance the minutes (10 minute increments) to the desired start time. You have now entered the "A" program for 5 days into the computer memory.

Repeat step 5 substituting B for A



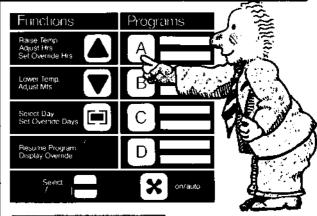




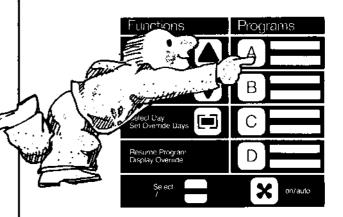
Figure 7. Heat set point

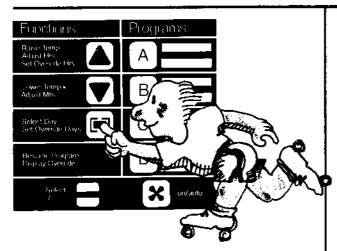


Figure 8. Cool set point



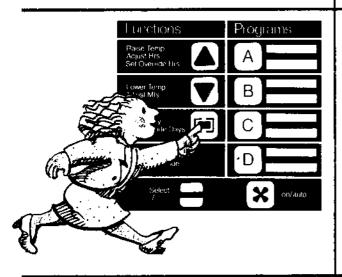
Figure 9. Time





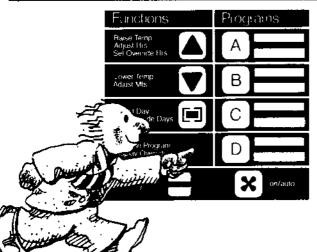
STEP 6.Enter program for Saturday

Press and advance the day indicator to the right hand position. Now follow step 5 for programs A,B,C and D for Saturday.



STEP 7. Enter program for Sunday

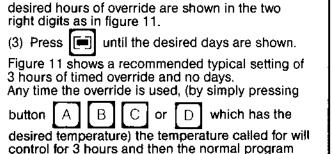
Press again and advance the day indicator to the left hand position. Now follow step 5, for programs A,B,C, and D for Sunday.



STEP 8. Return to normal operations

Press and the display will alternate between temperature and time and control of your environment will now be automatic as programmed.

STEP 9. Continuous override At any time you may override the scheduled program by merely pressing the program button [A or D with the temperature you wish to hold. The display will then only show that temperature. The temperature will now control continuously at the selected program temperature until you press (unless you have used the timed override feature, in which case the normal program will resume after the override time has elapsed). Enter timed override While it is not necessary for normal operations, timed override is a very convenient feature and its use is strongly recommended. (1) Press until you observe your display as

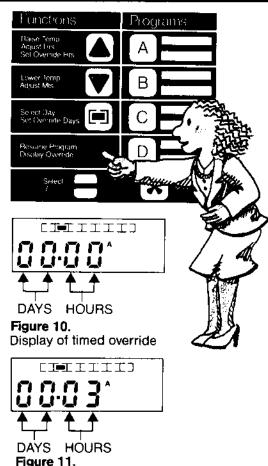


in figure 10.

will resume again.

operation.

(2) Press and hold until the



1. Press A and check that it now shows your desired heat set point, for your 5 day program. Press A again and check your cool set point. Press A again and check your time. (2) Repeat for programs B, C, and D. (3) Repeat for Saturday and Sunday programs, after pressing to advance to the desired day. (4) Record your program in pencil on the thermostat (figure 12). Simply pressing returns to programmed

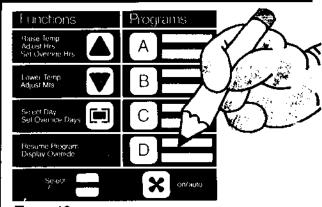
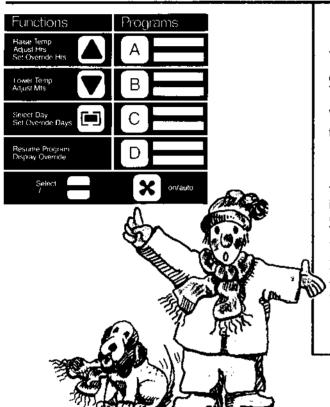


Figure 12.

Using some special features



Fan operation

To select FAN ON press . The fan will operate continuously and the fan symbol will be displayed. To select FAN AUTO, which operates the fan only when the system is running, press a second time and the fan symbol will disappear.

Battery symbol

The battery symbol indicates two conditions. If it is flashing, it indicates a missing or low battery condition. When this condition occurs, go to BATTERY INSTALLATION AND START-UP for instructions on how to replace the battery. If the battery symbol is displayed continuously, it indicates that the power is off and that the thermostat is maintaining its memory using the battery. A fresh battery will last 5 to 10 days without power to the thermostat. With continuous power the battery should last two to three years.

Caution: use 9 volt alkaline battery only.

Notes:		•
		:
:		
		;
		 ·

Installation instructions

- Disconnect power supply to systems before beginning installation to prevent personal injury or death from electrical shock or entanglement in moving parts and to prevent equipment damage.
- Ensure control voltage is 20-30 Vac.
- We recommend installer be a trained, experienced service technician.

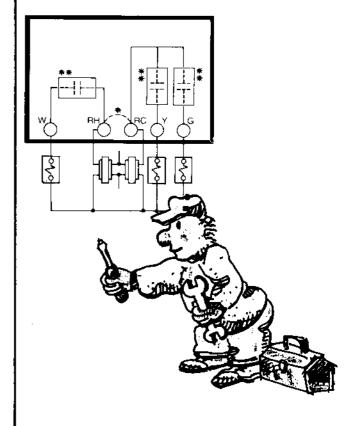
Thermostat location

To ensure proper operation, the thermostat should be mounted on an inside wall in a frequently occupied area of the building. In addition, its position must be at least 18 inches from any outside wall, and approximately five feet above the floor in a location with freely circulating air of an average temperature. Be sure to avoid the locations described below when determining a site for the thermostat.

CAUTION: ZONE INTEGRITY MUST BE MAINTAINED TO EFFICIENTLY CONTROL UNITS OR GROUPS OF UNITS. UNLESS ZONES OF CONTROL ARE CONSIDERED AND ACCOUNTED FOR, ADJACENT UNITS MAY OPERATE IN HEATING AND COOLING MODES SIMULTANEOUSLY.

Do not locate the thermostat

- behind doors or in corners where freely circulating air is unavailable.
- where direct sunlight or radiant heat from appliances might affect control operation.
- · on an outside wall.
- adjacent to, or in line with, conditioned air discharge grilles, stairwells, or outside doors.
- where its operation may be affected by steam or water pipes or warm air stacks in an adjacent partition space, or by an unheated/ uncooled area behind the thermostat.
- where its operation will be affected by the supply air of an adjacent unit.
- near sources of electrical interference such as arcing relay contacts.



Connecting thermostat

Figure 14.
Typical connections for 1-stage heat, 1-stage cool system

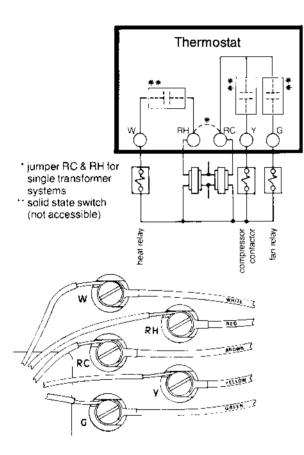
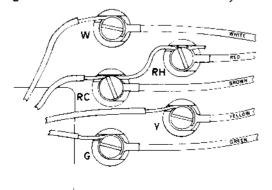


Figure 15a. Five wire two transformer system



1. Make sure the power to the systems is off.

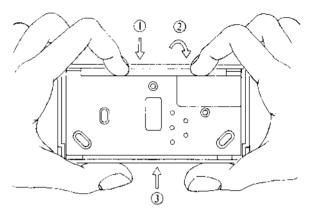


Figure 13. Removal of Mounting Plate (thermostat lying face down on flat surface)

- 2. Pull front unit off of mounting plate.
- 3. For new installation, identify wires as per table 1. For replacement, identify wires before removing old thermostat.
- 4. Position the mounting plate so that all the control wires protrude through the centrally located slot (figure 15) Level for appearance and mark the three mounting holes or use the template for locating the holes (back cover). Drill holes using a 3/16" (5mm) drill bit. Install supplied anchors, reposition the mounting plate and secure it to the wall. Do not overtighten screws.
- 5. Connect the control wires to the proper terminals (figure 14), by backing out each terminal screw and wrapping the respective control wire around it.

Table 1

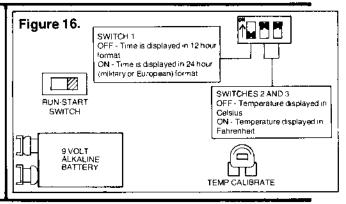
SYMBOL	OUTPUT TERMINAL DESCRIPTION
G	Energized when fan switch is on or when Y or W is energized. See fan option.
Υ	Energized when cooling is required.
RC	24 Vac connection for cooling and fan transformer (Jumpered to RH for single transformer systems).
⊁ RH	24 Vac connection from equipment transformer.
y w	Energized when heating is required.

Figure 15b. Four wire single transformer system. Note: jumper RC & RH.

Setting slide switches

CAUTION: DO NOT INSTALL BATTERY UNTIL SLIDE SWITCHES INDICATED ARE SET!

6. There are a number of options that you can select with the slide switches. They slide up and down very easily using a pen. The ON position is marked on the block that encloses the switches (figure 16). Set the slide switches using the information in figure 16 as your guide.



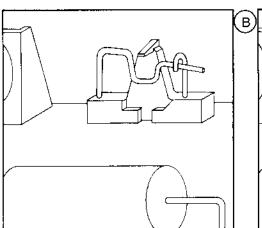
Fan Option

Figure 17. Fan Option

Figure 17 shows a wire loop which, when connected, will cause the fan to come on immediately with a call for heat.

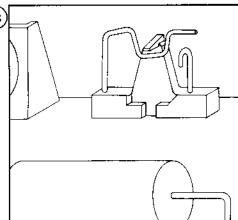
If the fan is to be controlled by the heating system, cut or disengage the wire loop.

Your thermostat will have either the Aor Boonfiguration.



Fan on with call for heat

Fan on with call for heat



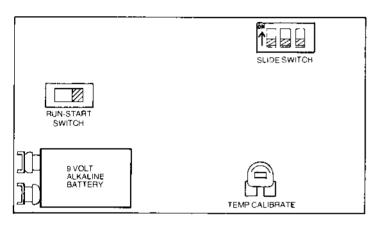
Fan controlled by heating system

Fan controlled by heating system

Battery installation & start-up

Figure 18. Start-up display





Checking installation

CAUTION: UNIT HAS BUILT-IN TIME DELAYS FOR HEAT AND COOL. THEY MAY VARY DEPENDING ON ROOMTEMP RISE OR FALL. DELAYS CAN BE FROM 3 TO 15 MIN. PER STAGE.

Follow the checkout procedure outlined in Table 2. The thermostat should be in the OFF mode. When the system power is turned on the battery symbol should disappear or flash if the battery is weak or missing. Minimum on and off times have been built into the thermostat to prevent HVAC equipment damage due to short cycling. These delays may be longer than specified if the HVAC equipment has built in delays.

- 7. Install the battery.
- 8. Operate the RUŃ-START switch. Move to the START position. Wait, then move it to the RUN position and leave it there.
- 9. Ensure the display is flashing once per second (figure 18), If it is not, repeat step 8.
- 10. Push the RESUME button and the display will alternate every 4 seconds between room temperature and time.
- 11. Replace the thermostat front unit on mounting plate.

Note: Keep the five control wires away from the battery area.

Table 2

STEP	PUSH BUTTON	DISPLAY SHOWS	RESPONSE
1	Ш	7	Cool mode
2		0	Auto heat/cool mode
3	8	6	Heat mode
4		(no symbol)	All sytems go off after 7 seconds.
5		select required (step 1, 2, or 3	d mode) for further testing
6	A	Stationary 70 or 74 (20.0 or 22.0)	Heating and cooling set- points. Room temper- ature will be maintained at these set-points
7		Increase or decrease of set point temperature	Equipment will respond subject to time delays
8	A	9 9 9 9 9 9 9 9	REDUCING BUILT-IN TIME DELAY: 1. The unit must be in 'F (Slide switches 2 and 3 on). 2. Select either heat or cool to be tested 3. Raise or lower heat or cool setpoint 10" in A 4. Press and hold the A until system energises, (Pago 2 no. 5) 5. Equipment will now operate subject to its own delays.
9	×	×	Fan runs continuously
10	×	(no FAN symbol)	Fan operates automatically

Trouble shooting guide

SYMPTOM	CAUSE	ACTION
UNIT APPEARS TO BE OKAY BUT WILL NOT ACTIVATE RELAYS OR RELAYS CHATTER	SOLID STATE SWITCH FAILURE HIGH RESISTANCE AT EQUIPMENT	REPLACE UNIT INSTALL RELAY
HEAT OR COOL STATUS INDICATORS	1) BUILT IN TIME DELAYS	OVERRIDE USING TIME DELAY SPEED UP.
SYSTEM CYCLES BEFORE REACHING SET POINT	BUILT IN COMPUTER RECOVERY	UNIT OPERATING NORMALLY
DISPLAY FLASHING-PROGRAM LOST	STATIC OR ELECTRICAL STORM	— DISCHARGE BEFORE TOUCHING STAT! — OPERATE RUN-START SWITCH
TEMPERATURE READING INCORRECT	1) OUT OF CALIBRATION 2) EXTERNAL HEAT SOURCE 3) DOWN DRAFT AT THERMOSTAT	 RECALIBRATE WITH ACCURATE THERMOMETER. ISOLATE STAT FROM HEAT SOURCE OR OVERHEAD DIFFUSERS.
BLANK DISPLAY	START-RUN SWITCH LEFT IN START POSITION BATTERY DEAD STATIC ELECTRICITY	— PLACE IN RUN POSITION — TEST AND REPLACE — RESET WITH START-RUN SWITCH
DISPLAY READING 24 HR FORMAT	SLIDE SWITCH 1 IN THE "ON" POSITION	SET IN "OFF" POSITION IF DESIRED
STAT WILL NOT RETURN FROM SET BACK	1) OVERRIDE SET FOR DAYS 2) WRONG DAY OF WEEK	 PRESS RESUME, REMOVE DAYS FROM MEMORY. PRESS DAY KEY & ADVANCE TO CORRECT DAY.

When replacing battery, maintain power to system to avoid losing your program.

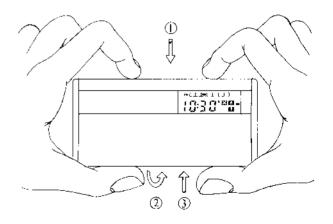


Figure 20. Removal of front unit for replacing battery or servicing after installation.

Specifications

Rated voltage 20 - 30 Vac

Rated current 0.050 – 1.5 Amp continuous for

each output with surges to 4 Amps

Cycle rate 3 CPH cooling

6 CPH heating

Minimum on/off times 6 minutes for cooling to prevent short cycling 3 minutes for heating

Maximum recovery rate 6°F (3°C)/hr cooling

12°F (6°C)/hr heating

Control range

Heating 51 to 106°F in 1° steps or

10.5 to 38°C in 0.5° steps

Cooling 55 to 110°F in 1° steps or

12.5 to 40°C in 0.5° steps

Temperature measurement

range

50 to 113°F or 10 to 41.5°C

Accuracy $\pm 0.5^{\circ}F \pm 0.05^{\circ}F/^{\circ}F$

difference from 70°F

Battery 9 volt ALKALINE (Eveready # 522

or equivalent) for memory retention during power outage

Quartz clock accuracy ± 80 seconds/month

Range of ambient operation 32 to 131°F (0 to 55°C)

Storage temperature - 30 to 131°F (- 34 to 55°C)

Operating humidity range 5 to 90% RH

Warranty

Full one year warranty. Valera Electronics Inc. warrants to the original purchaser that its ENERSTAT and components parts will be free from defects in workmanship and materials for a period of one year from the date of purchase. Your dealer will provide free replacement of your ENERSTAT upon proof of purchase.

Limited 4 year Warranty

Valera Electronics Inc. offers a limited warranty for an additional 4 years. For details contact your dealer.

Exclusions

This warranty does not apply in the event of misuse, abuse or as a result of unauthorized alterations or repairs. Valera Electronics Inc. will not be liable for any consequential damages including, without limitation, damages resulting from defects, loss of use, or misuse.

Valera Electronics Inc. manufactures similar products for Original Equipment Manufacturers. Such products may not be interchangeable with similar Valera products, and should be changed with products of such O.E.M.

This equipment, if installed in strict accordance with the manufacturers instructions, complies with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC rules.

enerstat[™]