

# ETN-24-HC21-PROG

## Econo-Vent

Owner's Manual - Installation  
and Operating Instructions

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**Please read this manual carefully before installation and use.**

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## 1. Introduction

The **Econo-Vent** thermostat control is an attractive and fully functional thermostat that will provide years of dependable and comfortable control of your home's heating and air conditioning system. This unique control AUTOMATICALLY introduces fresh - outdoor ventilation air into your home's comfort system. This ventilation air is becoming a necessity as new homes are being constructed with materials making the house air tight.

Fresh-Ventilation Air is required for:

- Comfort & Economical use of the HVAC system.
- Reduction of moisture.
- ODOR Reduction.

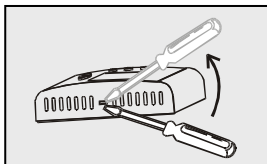
## 2. Options and Accessories

- Hand held remote control with weekly program.

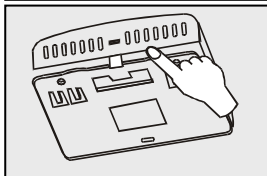


For details on where to purchase accessories, please contact MEITAV-TEC for your nearest location or visit our web site at **[www.meitavtec.com](http://www.meitavtec.com)**

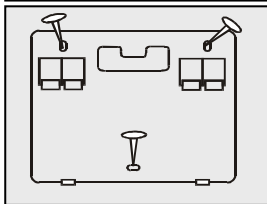
### 3. Installation Instructions



Separate the front panel from back panel by depressing the tongue located in the top of the unit.

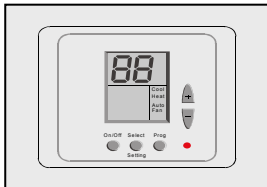


Pull the back panel out.



Line the back panel up against the wall or flat surface. Install three screws as required.

Make electrical connections as shown on enclosed electrical wiring diagram. (Next page)




Install the cover to the back panel; first the two tabs on the bottom and then the top tongue. Push until tight against the wall.

## 4. Wiring Connections

Switch	Function
Rc	24 VAC RED
Rh	24 VAC RED (jumped to Rc)
C	24 VAC Common from transformer
W1	Heating 1st Stage
W2	Heating 2nd Stage

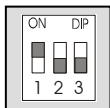
Switch	Function
TO	Outdoor sensor – OS01
TO	Outdoor sensor – OS01
Y2 (FD)	Fresh air damper
G	Fan
Y1	Cooling 1st Stage

 Note: If one transformer is used, the factory-installed jumper between Rc and Rh must be used. Fresh Air Damper is wired to Y2(FD) and c.

 **IMPORTANT!** Before making any changes in the dipswitch disconnect electricity in the main board.

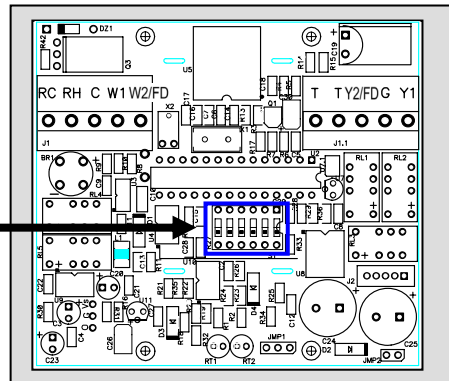
## 5. DIP switch Explanations

5.1 The DIP switch is located in the middle of the board as shown in the drawing. (Inside the thermostat)



Default Switch from Factory

DIP switch



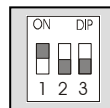
**Table 5.1 – Dipswitch selection**

Switch	Function	Default	ON	OFF
1	Not in use – Leave it ON	ON		
2	3 minutes time delay for compressor	OFF		X
	Without 3 minutes time delay for compressor		X	
3	Fan Control for Electrical Heat	OFF		X
	Fan Control for Gas/Oil Heat		X	

 Use this table together with the illustration above showing the switch configuration.

## 5.2 DIP Switch Operation

- The Dip switch has 3 pins.
- Each pin can be ON or OFF. In the picture, pins 1,2-ON and pin 3-OFF



Default switch from factory

## 5.3 Fan Explanation (switch 3 in dip switch)

- Fan control "electric"  
Fan will be activated as required in heating and cooling, depending on the position of the button "AUTO FAN."
- Fan control "oil/gas"  
This option is used when the heating system is different from the A/C unit. (i.e. furnace).  
In this option the fan will work as such:
  - **FAN ON** position: Fan works continuously.
  - **AUTO FAN** position: In Heat Mode, Fan WILL NOT be activated by thermostat. Heating units will activate the fan.

## 6. Operating Manual

### 6.1 Mode button

#### Activation

- On
- Off

#### Operation

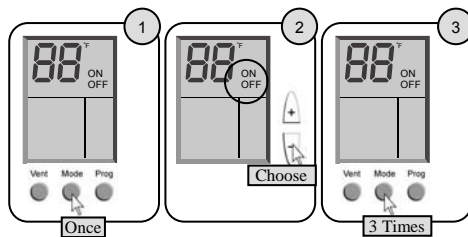
- Cool
- Heat
- Cool & Heat (Auto change)
- Fan Only

#### Fan

- Auto Fan
- Fan On

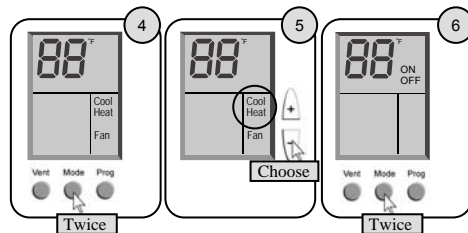
#### 6.1.1 Switching the thermostat On/OFF

1. Press the **MODE** button - "ON" or "OFF" will flash, depending on the current status of the thermostat.
2. Using the "+" or "-" buttons, switch between ON and OFF.
3. Press the MODE button 3 times to exit.



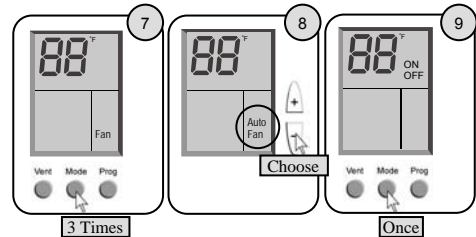
#### 6.1.2 Choosing Mode

4. Press the **MODE** button **twice**.
5. Using the "+" or "-" buttons, switch between COOL / HEAT / COOL HEAT (Auto-change) / FAN ONLY.
6. Press the **MODE** button **twice** to exit.



### 6.1.3 Choosing Fan/Auto-Fan

7. Press the MODE button 3 times.
8. Using the "+" or "-" buttons, switch between AUTO FAN and FAN. (In AUTO FAN the fan will only run when the system in heat or cool).
9. Press the MODE button to exit.



## 6.2 Set point temperature adjustment buttons

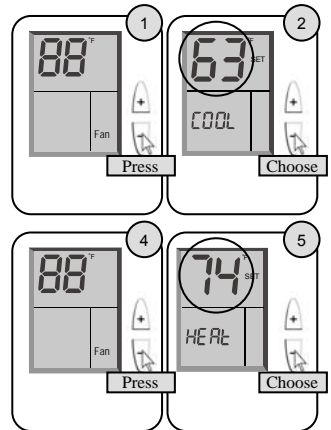
The process of adjusting the set point temperature depends on the current mode of the thermostat.

### 6.2.1 Changing set point temperature in COOL mode:

1. Press the "+" or "-" buttons – set point temperature will flash (pic.1).
2. Adjust set point temperature using the "+" or "-" buttons (pic.2).
3. The thermostat will automatically return to normal display mode after 7 seconds.

### 6.2.2 Changing set point temperature in HEAT mode:


4. Press the "+" or "-" buttons - temperature will flash (pic.4).
5. Adjust set point temperature using the "+" or "-" buttons (pic.5).
6. The thermostat will automatically return to normal display mode after 7 seconds.





### 6.2.3 Changing set point temperature in modes FAN ON and COOL/HEAT (auto-change):

- Adjust set COOL temperature - Follow steps 1-3.
- Wait 7 seconds – HEAT will appear on display.
- Adjust set HEAT temperature - Follow steps 5-6.

 The thermostat keeps a minimum differential of at least 1 degree between Heat set and Cool set (Heat is always less than Cool).

### 6.3 Vent button

There is a Fresh Air Damper connected to the thermostat.

When the damper opens, it will bring fresh air into the house.

The damper will open automatically based on the outdoor temperature.

#### 6.3.1 Normal operation (automatic)

When thermostat is on (and based on the outdoor temperature) the damper will open automatically.

When the damper opens, an indication will appear on display: OA:On.

 If the outdoor sensor is **not connected**, automatic mode will not be activated.

#### 6.3.2 Manual operation

You can override the automatic function of the damper and the fan for 1/2 hour.

The feature is used to ventilate the house when needed.

##### ▪ Activate manual operation (pic.1)

- Press the VENT button.
- OA:30 will appear on display and the damper and the fan will work for 1/2 hour (regardless of other settings)
- The display will alternate between the normal clock display & minutes left before 30 minute time-out (OA:##).
- When the display reads (OA:00) the damper will close.



 Manual mode overrides automatic mode.

▪ **Deactivate manual operation (pic.2)**

- Press the vent button again.
- The display will return to normal display mode (real time clock).

**6.3.3 View outdoor temperature (pic.3)**

- Press and hold the VENT button (8 seconds) until OA:## will appear on display (##-outdoor temperature – a number bigger than 30).
- Press the MODE button or wait 25 seconds to return to normal display mode.
- If the outdoor sensor is not connected, OA:-- will appear on display.



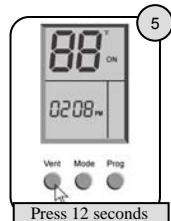
**6.3.4 Cancel the automatic operation of the fresh air damper and fan (pic.4)**

- Press and hold the VENT button (12 seconds) until OA:OF will appear on display (the Display will alternate between OA:OF and a real time clock).



**6.3.5 Reactivate automatic operation of the fresh air damper and fan (pic.5)**

- Press and hold the VENT button (12 seconds) until real time clock will appear on display



#### 6.4 Unoccupied Mode (Set Back Mode)

Unoccupied mode overrides the set point temperature and the weekly program and uses set economy temperatures for heat and cool (53°F-Heat, 86°F-Cool – not adjustable), when you leave home or office for any period of time - vacation, unexpected event - and the system will work in SET BACK mode.

##### **Setting the thermostat to work in Unoccupied Mode:**

- Switch on the thermostat
- Press and hold PROG button (8 sec.) until EC (Economy) will appear on display.
- When returning home (office) press and hold (8 sec.) the PROG button until the thermostat returns to normal display mode.



**In Unoccupied Mode, all the buttons do not function.**

#### 6.5 Override Set Temperature:

At any time you may change the temperature by pressing the set (+/-) buttons. The new temperature will be retained until the next program starts.



**The thermostat's memory (program) will be kept for 12 hours during power failure without the use of batteries.**

#### 6.6 Back Light

The backlight of the unit will activate when any button is pressed or the information is sent from the remote control.

#### 6.7 Freeze Protection

When the temperature drops below 45°F, the thermostat will turn on the heat and fan outputs in order to protect the system from freezing. (The fan will not turn on when Oil/Gas fan is selected – see #5.3).

This function will be activated when the thermostat is either in On or Off position.

The Display will alternate between "AL" and "TEMP"

The thermostat will return to normal mode when the temperature rises above 48°F.

## 7. Programming

The thermostat is a 5-1-1 programmable; weekdays Monday through Friday, Saturday and Sunday both have individual programs.

There is four program events per day: 1-Wake, 2-Day, 3-Return, 4-Sleep

Before programming your thermostat, be familiar with the display of the unit:

### Thermostat Display

#### 1. Temperature digits

In normal display will show the temperature in the room.

When +/- is pressed, it will flash and show the set point for the selected mode.

#### 2. Days of the week

When setting the program. It will display the period that you are setting.

Example: when display shows: MON-TUE-WED-THU-FRI, you are setting the weekdays program.  
(The program will repeat on each of these days).

In normal display the actual day of the week will be displayed.

#### 3. Real time clock, AM/PM.

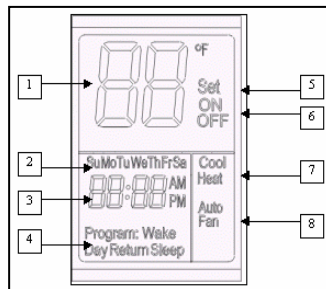
When setting the program, "COOL" or "HEAT" will be displayed in place of the time to indicate the setting.

#### 4. Program event currently being adjusted will be indicated:

- **Wake** 1<sup>st</sup> program of day.
- **Day** 2<sup>nd</sup> program of day.
- **Return** 3<sup>rd</sup> program of day.
- **Sleep** 4<sup>th</sup> program of day.

5. **Set** - When changing the temperature set point, the temperature digits will flash, and the "SET" will appear in the display.

6. **ON/OFF** - thermostat active or deactivated.



**7. Heat/Cool modes** - Heat: Heating mode active, Cool: Cooling mode active  
 When both on display: auto-change mode (heat & cool) – the current active mode will flash.

**8. Fan Mode**

When the display shows "FAN" – the unit's mode is Fan ON.  
 When the display shows "Auto Fan" - the unit's mode is Auto Fan.

**Normal display**

In normal display, the display will show:

- Ambient temperature in the room.
- ON or OFF.
- Current day of the week.
- Current time of day.
- Current active program.
- Cool/Heat mode.
- Fan mode.

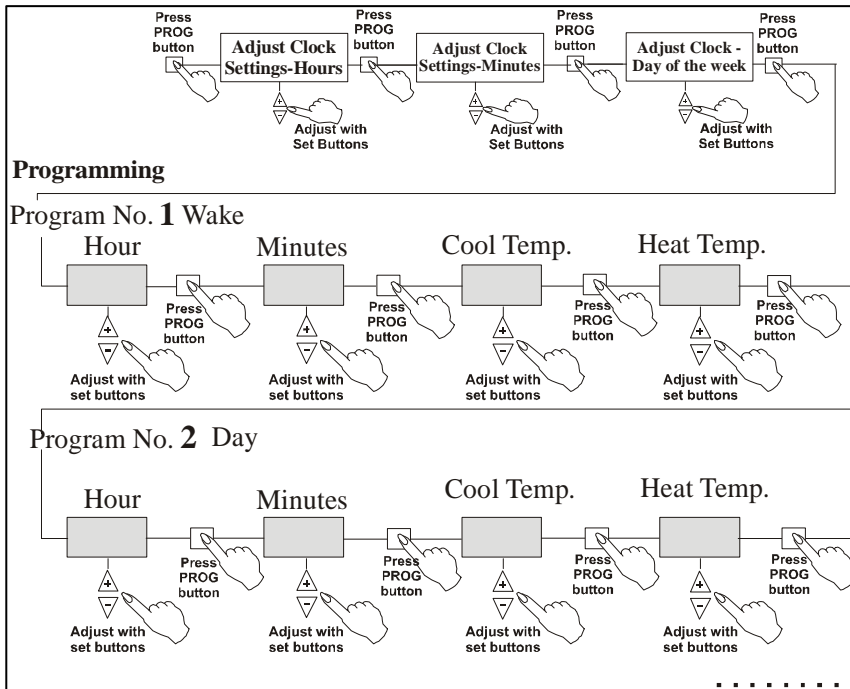
**Programming defaults from the factory.**

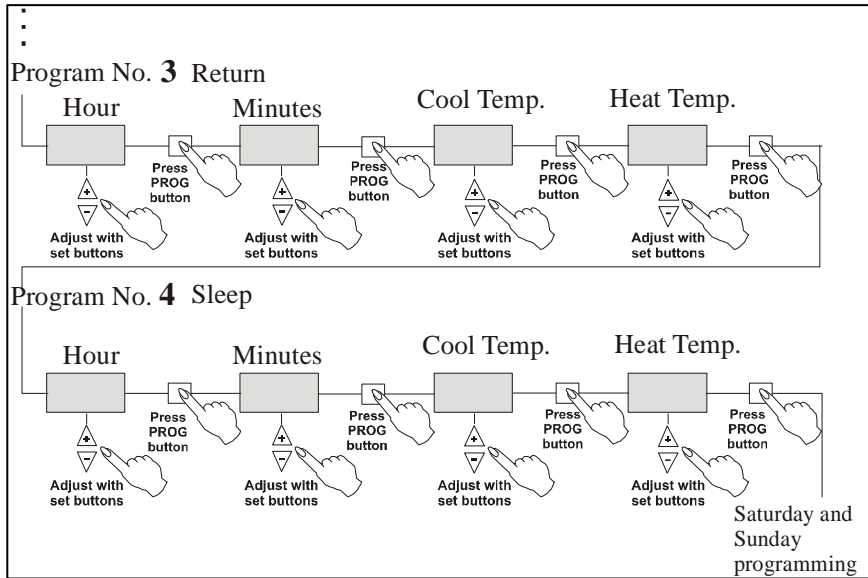
<b>Monday to Friday</b>	1 (Wake)	2 (Day)	3 (Return)	4 (Sleep)
Start time	6:30 AM	8:00 AM	5:30 PM	10:00 PM
Cool Set Point	78°F	85°F	78°F	82°F
Heat Set Point	70°F	62°F	70°F	62°F

<b>Saturday</b>	1 (Wake)	2 (Day)	3 (Return)	4 (Sleep)
Start time	7:30 AM	12:30 PM	6:00 PM	11:30 PM
Cool Set Point	76°F	74°F	72°F	78°F
Heat Set Point	70°F	70°F	70°F	65°F

<b>Sunday</b>	1 (Wake)	2 (Day)	3 (Return)	4 (Sleep)
Start time	7:30 AM	12:30 PM	6:00 PM	11:30 PM
Cool Set Point	76°F	74°F	72°F	78°F
Heat Set Point	70°F	70°F	70°F	65°F

- The following chart will help to simplify making normal adjustments (System Mode, Fan Operation) and the program.
- We recommend that you fill out the chart BEFORE setting the weekly program.
- On the chart, select a cooling and a heating set point temperature. Remember to keep a safe differential between Heat and Cool for auto changeover.
- The display will show the program (weekday, Saturday or Sunday).
- If no key is pressed for 30 seconds, the thermostat will return to normal display mode.





Follow the steps above to set the programs for Saturday and Sunday.


At any time during the programming you can return to normal display mode by pressing the **MODE** button.

When overriding a set program – no program name will appear on display (see #6.5)

## 8. Technicians Settings

Differential for fresh air damper and Offset settings.

- Set temperature to 50°F, and wait until display stop flashing.
- Press and hold MODE button (6 sec.) until “FAD” and digits will appear in display.
- Adjust the differential for the fresh air damper using the set buttons (+ or -). Range: 2...6°F. (Default from factory: 5°F).
- Press MODE button again – “OFFS” and the OFFSET (a number between -6...+6) will appear (not flashing) on display.
- Change the Offset for ambient temperature using the (+) and (-) buttons.  
The offset is used for calibration of the measured temperature.
- Press MODE button again to return to normal display mode.

 **If no key is pressed for 15 seconds – the display will return to normal display mode.**

 **For more information about the work of the Fresh Air Damper please refer to the installer instructions.**



## 9. RT04 - Hand held remote control – Option – Purchase separately

### 9.1 General

This remote control is Infrared; the remote must be pointed at the thermostat to operate.

Every time you change a parameter in the Remote Control, you must send it to the thermostat by pressing "ON/SEND".

Every time that the information is sent to the thermostat, the Back Light will turn ON for a few seconds.

### 9.2 Operating Manual

#### On/Send,OFF

- Press ON/SEND to activate the air conditioner and/or updating information.
- Press OFF to turn the thermostat off and update information.



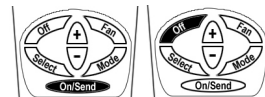
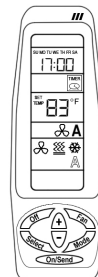
When sending information to the thermostat – the remote control must point towards the thermostat.

#### Fan:

- Press FAN button to change between:  
FAN ON (⊗) or AUTO FAN (A).
- Press ON/SEND button to send information to thermostat.

#### Mode:

- Press MODE button to change between:  
COOL, HEAT, AUTO CHANGE and FAN ONLY.
- Press ON/SEND button to send information to thermostat.



## Temperature Set Point:

### Cool Mode:

- Press the set buttons (+) or (-).
- COOL & digits will flash.
- Select the desired temperature.
- Press ON/SEND button to send information to thermostat.



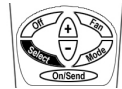
### Heat Mode:

- Press the adjustment button (+) or (-).
- HEAT & digits will flash.
- Select the desired temperature.
- Press ON/SEND button to send information to thermostat.



### Auto Change Mode:

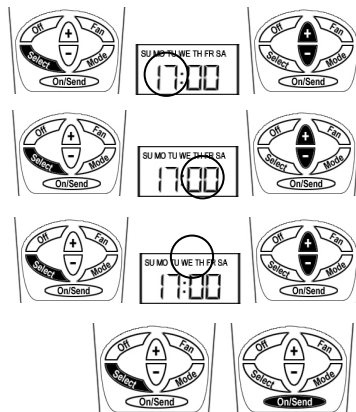
- Press the adjustment buttons (+) or (-)
- COOL and SET TEMP will flash.
- Set cooling with (+) or (-) buttons.
- Press SELECT button.
- HEAT and SET TEMP will flash.
- Set the heating set point with (+) or (-) buttons.
- Press the SELECT button again or Press ON/SEND button to send information to the thermostat.



The thermostat keeps a minimum differential of at least 1 degree between Heat set and Cool set (Heat is always less than Cool).

## Real Time Clock and Day:

- Press SELECT button - CLOCK SET will flash.
- Press (+) or (-) buttons - the hours will flash.
- Adjust the hours with (+) or (-) buttons.
- Press SELECT again - minutes will flash.
- Adjust the minutes with (+) or (-) buttons.
- Press SELECT again - weekday will flash.
- Adjust the day with (+) or (-) buttons.
- Press SELECT again to exit from program or  
Press ON/SEND button to send information  
to the thermostat.



## Programming:

Set the Program times and Temperature settings for the week:

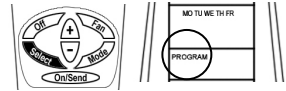
- The remote is 5-1-1 programmable: weekdays (Monday to Friday), Saturday, and Sunday can be programmed differently.
- 4 program events per day: 1 (Morning), 2 (Day), 3 (Evening), 4 (Night)



The program can be set away from the thermostat and can be sent later on.

To send the program to the thermostat, follow the steps below without adjusting times and temperatures. Only press the ON/SEND button each time the word SEND blinks on display (point the remote control to the thermostat)

- To enter programming: Press and hold SELECT button for three seconds.



- PROGRAM (flashing) and the days Mon-Fri will appear on display.
- Press (+) or (-) buttons, PROGRAM 1 & START (flashing) will appear.



- Press (+) or (-) button - the hours will flash.
- Adjust the hours with (+) or (-) buttons.
- Press SELECT button - the minutes will flash.
- Adjust the minutes with (+) or (-) buttons.





- Press SELECT button - Cool (flashing) & Temperature will appear.
- Adjust the temperature with (+) or (-) buttons.



- Press SELECT button - Heat (flashing) & Temperature will appear.
- Adjust the temperature with (+) or (-) buttons.



 **The controller keeps a safety differential of at least 1 degree between Heating set point and Cool set point (Heat is always less than Cool).**

 **After selecting the heating set point, you cannot reduce the cooling set point less than the heating set point.**

- Press SELECT button: **PROGRAM 2 & START** (flashing) will appear.
- Press (+) or (-) buttons and adjust the hours, minutes and temperature, the **same way as in PROGRAM 1**
- Press SELECT button: PROGRAM 3 & START (flashing) will appear.
- Press (+) or (-) buttons and adjust the hours, minutes and temperature, the **same way as in PROGRAM 1**
- Press SELECT button: PROGRAM 4 & START (flashing) will appear.
- Press (+) or (-) buttons and adjust the hours, minutes and temperature, the **same way as in PROGRAM 1**

- SEND will flash, press ON/SEND button to
- send the information to thermostat.
- PROGRAM (flashing) and SA (Saturday) will appear in display.
- Set programming for Saturday the same way as programming MON to FRI.
- SEND will blink, press ON/SEND button to send the information to thermostat.
- PROGRAM (flashing) and SU (Sunday) will appear in display.
- Adjust the programming for Sunday the same way as programming MON to FRI.



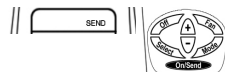
- SEND will blink; press ON/SEND button to send the information to the thermostat.



- The TIMER will blink; using the (+) or (-) buttons, Select TIMER ON or OFF.



- If you changed between TIMER ON (programmable) or OFF (non-programmable), the SEND will blink.
- Press SEND/ON button to send the information to the thermostat.
- If you did not change between them, press the SELECT button to end programming. (Programmable or non-programmable).



## Review

If you want to review your program or to change part of it:

- Enter the programming - press and hold (3 seconds) SELECT button.
- Select between MON-FRI, SAT, SUN programming and TIMER on or off by pressing the SELECT button.
- Enter a specific program - press (+) or (-) button when appropriate indication appears and continue as previously explained.

## 10. Troubleshooting for Technician

Problem	Solution
The display is blank	Check the thermostat for 24 VAC. Remove the front cover at test at the Rc (Rh) to C.
	Check for good wiring connections at: Rh (24 VAC for heat), Rc (24 VAC for cool), C (common).
	If you are using one transformer for cool and heat, check that the jumper is installed between Rc, Rh and common is tight.
Cool stages do not switch on	Check the Rc connection
	Check the Y1 connection
Heat stages do not switch on	Check the Rh connection
	Check the W1 connection
In heat mode, unit blows cool air	Check the Auto Fan settings. The unit may be set to FAN (shown in the display).
The display shows the word "PROGRAM" without the name of the program (wake, sleep, etc)	The unit is in OVERRIDE mode; the name of the program will reappear when the next program starts working.
Ambient temperature not accurate	Check if DIP switch 1 is in "ON" position (default). See table #5.1
	Adjust the offset. See #8