

## 1 Installation

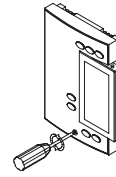
**TURN OFF POWER TO THE SYSTEM AT THE MAIN POWER PANEL TO AVOID ELECTRICAL SHOCK.**

Installation should be carried out by an electrician or a qualified technician.

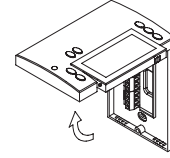
### 1.1 Find a Location for the Thermostat

- For a new installation, choose a location about 5 ft. (1.5 m) above the floor and on an inside wall.
- Avoid locations where there are air drafts (top of staircase, air outlet), dead air spots (behind a door), direct sunlight, concealed chimneys or pipes, or air diffusers.

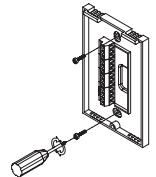
### 1.2 Prepare and Connect the Thermostat



Loosen the captive screw holding the base to the module.



Gently lift the lower part of the module to remove it from the base.



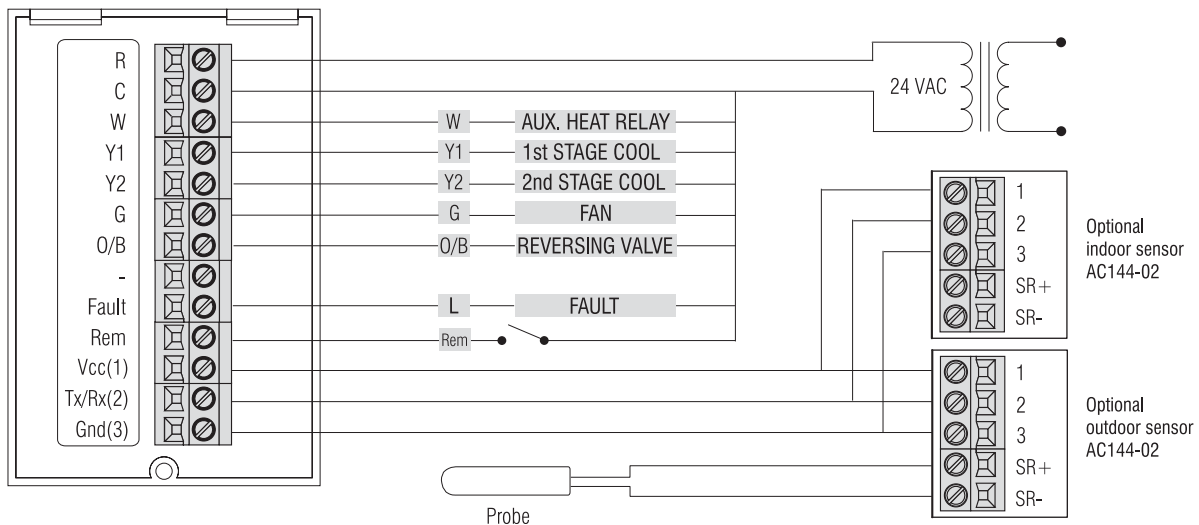
Secure the base using the wall anchors & screws. Wire the thermostat.

**TABLE 1: Wiring Terminals**

Terminals	OUTPUT CONFIGURATION (MODEL)				Connect to...
	1H1C Geothermal	2H1C	2H2C Geothermal	3H2C	
R	✓	✓	✓	✓	Supply 24 VAC
C	✓	✓	✓	✓	Common
W		✓		✓	Auxiliary heat relay
Y	✓	✓			Compressor relay
Y1			✓	✓	First compressor relay
Y2			✓	✓	Second compressor relay
G	✓	✓	✓	✓	Fan relay
O/B	✓	✓	✓	✓	Reversing valve
Fault	✓	✓	✓	✓	Heat pump fault output
REM	Unoccupied input (optional) - see 1.3				CT240/CT241/timer
Vcc (1) Tx/Rx (2) Gnd (3)	AC144-02 Remote Indoor and Outdoor Temperature Interface - see 1.4				AC144-02 <sup>a</sup>

a. For 2H1C & 3H2C models, the AC144-02 is required to use the balance point option (compressor cut-off).

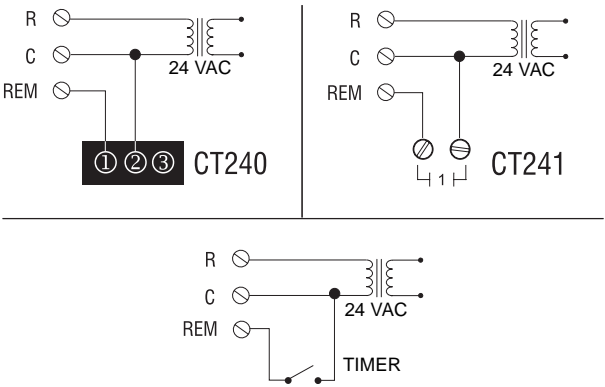
**FIGURE 1: Typical Wiring Diagram (model shown TH144-3H2C)**



1.3 Connecting the REM input (optional)

To remotely activate the Unoccupied mode, the REM input allows connection to an optional CT240/CT241 telephone controller, a central timer or an alarm system.

A closed contact remotely activates the Unoccupied mode (see 4.1).

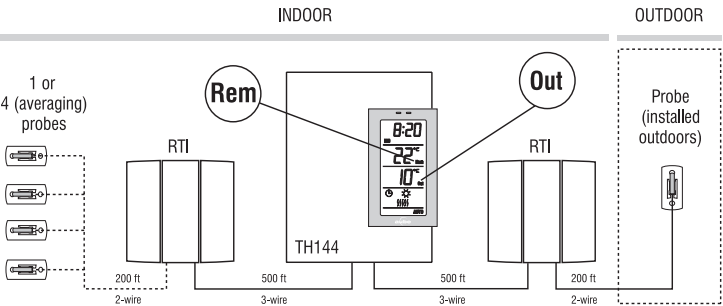


1.4 Connecting the AC144-02 RTI (optional)

The AC144-02 Remote Temperature Interface (RTI) connects to a TH144 thermostat for remote indoor or outdoor temperature readings.

**NOTE:** If you wish to use the balance point cut-off function to cut the heat pump compressor when the outdoor temperature drops below the defined cut-off setpoint (see section 4.4 to define this setpoint), you must connect a remote temperature interface.

**NOTE:** Refer to the AC144-02 installation instructions for details on how to connect the RTI to the thermostat.



1.4.1 Remote Indoor Sensing

The REM icon indicates that the temperature is controlled from a remote location using the RTI's housing sensor or the connected probe(s).

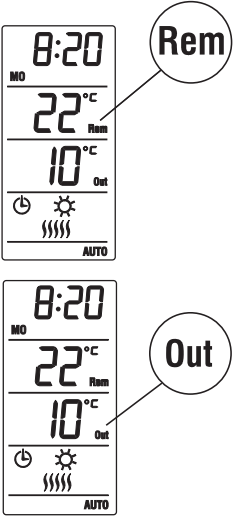
Temperature averaging can be obtained using up to 4 probes.

To return to local control, disconnect the RTI wires at the thermostat terminals and turn off for at least 5 seconds.

1.4.2 Remote Outdoor Sensing

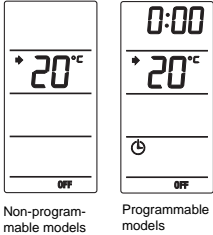
The OUT icon indicates the outdoor temperature read from the outdoor probe connected to the RTI.

On some models (2H1C & 3H2C), the outdoor temperature is used for the compressor cut-off point.



1.5 First Power On

When you power TH144 for the first time, it runs a sequence of tests and resets itself, which lasts approximately 10 seconds. The default setpoint is 20°C (68°F).



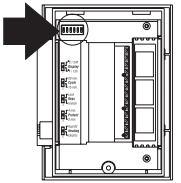
**NOTE:** The displayed ambient temperature might be higher than the real ambient temperature if you are holding the thermostat.

For the programmable models, open the thermostat's door, and set the time (**Hour** and **Minute**) and day (**Day**).


**NOTE:** To protect the compressor, TH144 has an On/Off delay of 2 or 4 minutes (default is 2 minutes) before starting or stopping the system (see the following section).

1.6 Configure the TH144

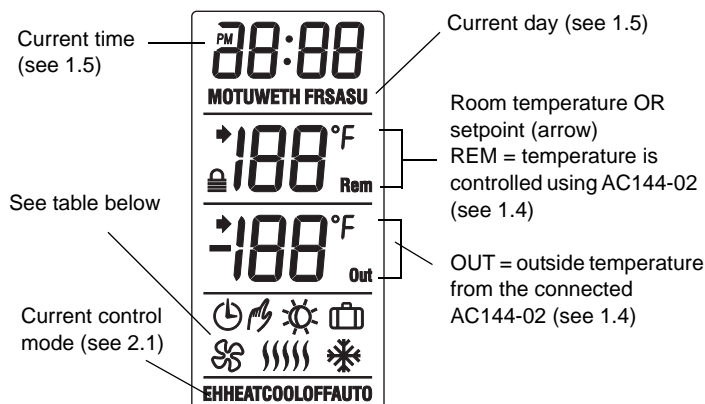
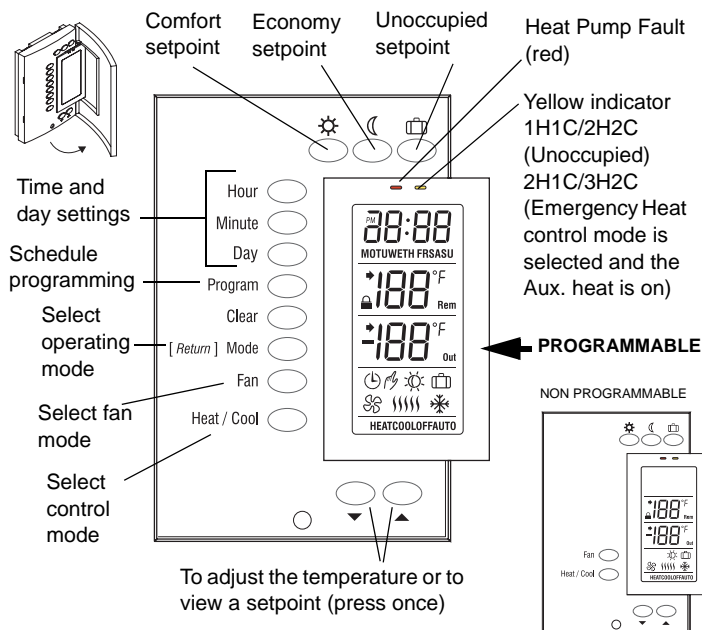
The TH144 offers many configuration options using the DIP switches located on the back of the thermostat. Default settings are inside the shaded cells.



**NOTE:** After first power-up, wait at least 5 minutes while the internal battery is being charged before configuring TH144.

Name	DESCRIPTION	UP	DOWN
Display	Select the display format. When you change the display format, the set-points revert to their default values.	°C/24h	°F/12h
Cycle	20 minutes = heavy commercial applications 15 minutes = residential & light commercial applications <b>NOTE:</b> On models not equipped with the Protect switch, the On/Off delay is set based on the cycle. That is, the On/Off delay is 4 minutes for the 20 minute-cycle and is 2 minutes for the 15 minute-cycle.	20 min.	15 min.
Aux	W = the compressor turns Off during auxiliary heating. W + Y = the compressor remains On during auxiliary heating.	W	W+Y
Keys	Lock the keypad. The  icon is displayed when any button is pressed to indicate that the setpoint or operating mode cannot be modified. On the programmable models, the schedule cannot be modified as well.	Lock	Unlock
Protect	To protect the compressor against too frequent On/Off, TH144 provides an On/Off delay selectable via this switch.	4 min.	2 min.
Stages	Select between 2H2C and 1H1C.	1H1C	2H2C
Valve	Select the polarity of the reversing valve. B= the valve is energized during heating. O= the valve is energized during cooling.	B	O

## 2 Basic Configuration



🕒	Programmable models only. Automatic Operating mode is executing your schedule. This icon is always displayed with the ☀ or 🌙 icon which represent the programs setpoints.
👉	Programmable models only. Manual Operating mode. This icon is either displayed alone (a manual setpoint was set) or with the ☀ or 🌙 icon
☀	Comfort setpoint. Associated with programs 1 and 3. Can also be used with manual mode or during a bypass.
🌙	Economy setpoint. Associated with programs 2 and 4. Can also be used with manual mode or during a bypass.
👛	Unoccupied setpoint. Activated from the TH144 or remotely (REM input is connected to a remote system)
🌀	The fan runs continuously.
🔥	The heating system is ON.
❄	The air conditioning system is ON.

## 2.1 Select the Control Mode

The mode indicates which system is used for temperature control. Use the Heat / Cool button to select one of the following modes:



HEAT	Controls the heating unit(s).
COOL	Controls the cooling unit(s).
OFF	Both units (HEAT and COOL) are OFF. The fan function is still enabled but no setpoint changes are allowed.
AUTO	Automatic changeover. Automatically alternates between HEAT and COOL. See section 4.5 for details.

## 2.2 Predefined Setpoints

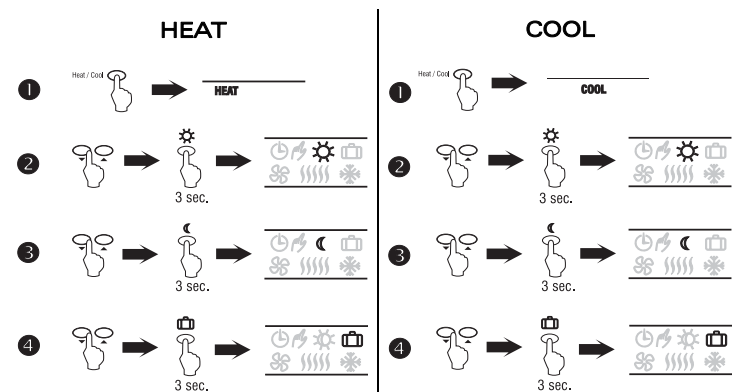
Predefined setpoints represent the temperature that you wish to have during the day, at night or while you are away. The Comfort and Economy setpoints are used with the Automatic mode (schedule, for programmable models) while the Unoccupied setpoint can be used with the Unoccupied mode (activated manually or remotely). This table displays the default setpoints:

Symbol	Predefined Setpoint	HEAT	COOL
☀	Comfort	21°C (70°F)	25°C (78°F)
🌙	Economy	17°C (62°F)	28°C (82°F)
👛	Unoccupied	10°C (50°F)	35°C (95°F)

### 2.2.1 To Modify the Predefined Setpoints

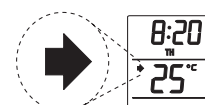
**NOTE:** If your thermostat controls both HEATING and COOLING, the predefined setpoints must be configured for both applications.

**NOTE:** The Cool setpoints cannot be lower than the Comfort Heat setpoint. If this should happen, the TH144 will automatically set your Cool setpoint 1°C (1°F) higher than your Comfort Heat setpoint.



## 2.3 View the Current Setpoint

To view the current setpoint, briefly press one of these buttons ▲▼ once. The arrow indicates the setpoint.



## 3 Programming

### 3.1 Program Your Schedule

The TH144 allows four setting changes for each day of the week. There are no pre-set programs.

For each day, enter the time at which you wake up (P1), the time you leave for work (P2), the time you return home (P3) and the time you go to bed (P4):

Programs	Associated Setpoint	Time
P1	☀ (Comfort)	Wake up
P2	☾ (Economy)	Leave home
P3	☀ (Comfort)	Return home
P4	☾ (Economy)	Night

**NOTE:** For temperature increases (P1 and P3), allow at least 15 minutes per 1°C (2°F). For example, if you have lowered the temperature by 3°C (6°F) during the night and you wake up at 7 a.m., program the change for 6:15 a.m.

To reduce energy costs, you must lower the temperature for a period of 2 to 3 times the delay required to bring the temperature back to your comfort level.

#### 3.1.1 Set or Modify the Programs

- After 60 seconds of inactivity, the thermostat will automatically exit programming mode.
- It is sometimes faster to program the same schedule for the entire week and then modify the exception days.

- Press **Program**. MO and P1 are displayed.
- If necessary, press **Day** to select the day to be programmed or hold **Day** for 3 seconds to select all days of the week.
- Press **Hour** and **Minute** to set the start time.

**NOTE:** To clear an entry, press **Clear**; the time zone indicates (- : - : -) when the program is inactive.

- Press **Program** to select the next program.
- Repeat steps 2 to 4 for remaining programs.
- Press **Mode/Return** to exit.

#### 3.1.2 Programming Example

☀ Comfort (programs 1 and 3):

- starts at 6:00 a.m. and 4:00 p.m. from Monday to Friday
- starts at 6:00 a.m. on Saturday and Sunday

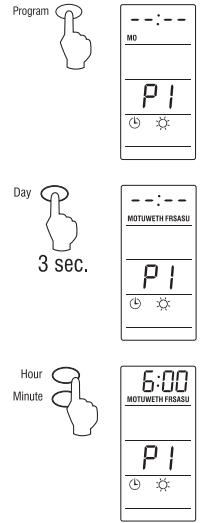
☾ Economy (programs 2 and 4):

- starts at 8:30 a.m. and 11:00 p.m. from Monday to Friday
- starts at 11:00 p.m. on Saturday and Sunday

PROG		MON	TUE	WED	THU	FRI	SAT	SUN
1	☀	6:00	6:00	6:00	6:00	6:00	6:00	6:00
2	☾	8:30	8:30	8:30	8:30	8:30	--:--	--:--
3	☀	PM 4:00	PM 4:00	PM 4:00	PM 4:00	PM 4:00	--:--	--:--
4	☾	PM 11:00	PM 11:00	PM 11:00	PM 11:00	PM 11:00	PM 11:00	PM 11:00

### To program this schedule

- Press **Program**. MO and P1 are displayed.
- Press and hold **Day** for 3 seconds to select all days of the week (MOTUWETHFRSASU).
- Set the time (6:00) using **Hour** and **Minute**.
- Press **Program** to select P2. Set the time (8:30) using **Hour** and **Minute**.
- Press **Program** to select P3. Set the time (4:00 p.m.) using **Hour** and **Minute**.
- Press **Program** to select P4. Set the time (11:00 p.m.) using **Hour** and **Minute**.
- Press **Mode/Return** to exit



### To erase programs 2 and 3 for Saturday and Sunday

- Press **Program** to access programming mode.
- Press **Program** until P2 is selected.
- Press **Day** to select Saturday (SA) and press **Clear**.
- Press **Day** to select Sunday (SU) and press **Clear**.
- Repeat steps 2 to 4 for P3.
- Press **Mode/Return** to exit.

### 3.2 Select the Operating Mode

The TH144 offers 2 operating modes:

#### 3.2.1 Automatic

This mode executes the programmed schedule. To activate:

Press **Mode/Return** until ☀ is displayed. The associated program setpoint icon is also displayed.

**NOTE:** This mode can be bypassed for up to two hours (see 4.2).

#### 3.2.2 Manual

Maintains a constant temperature. To activate:

- Press **Mode/Return** until 🌩 is displayed.
- Set temperature ▲▼ OR quickly press ☀ or ☾ or 🏠 to use a pre-defined setpoint.



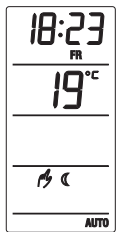
Temperature setpoint using arrow buttons.

Fixed setpoint automatic changeover \*



Temperature setpoint using a predefined setpoint button.

Heat and Cool setpoints are used for automatic changeover \*




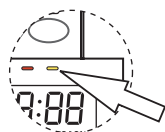
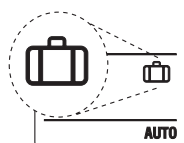
\* if you are using the automatic changeover mode, see 2.1 and 4.5.

## 4 Other Information

### 4.1 Remote Unoccupied

When the REM input is connected to a central system or a telephone controller and a signal is received through this input, the TH144 will switch to the unoccupied setpoint.

- The yellow LED on top of the display turns on when the unoccupied mode is activated (1H1C/2H2C models only).
- The  icon is displayed.
- For details on how to operate your telephone controller (CT240/CT241), refer to its manual.
- When this mode is activated remotely it can only be deactivated remotely. Although, it can be bypassed for a 2-hour period (see 4.2).




### 4.2 2-hour Temporary Bypass

When the TH144 is in Automatic or Remote Unoccupied mode, you can temporarily bypass the current setpoint for a 2-hour period after which it will return to the previous mode.

#### Automatic (schedule programs)


- Set the desired temperature  $\blacktriangle \blacktriangledown$  or quickly press  or  to use a predefined setpoint.

#### Remote Unoccupied

- Set the desired temperature  $\blacktriangle \blacktriangledown$ .  
On non-programmable models, all buttons are locked except for the  $\blacktriangle \blacktriangledown$  buttons.  
On programmable models, all buttons are locked except for the  $\blacktriangle \blacktriangledown$ , **Day**, **Hour** and **Minute** buttons.
- All other buttons or most buttons are locked depending on the thermostat model.
- The yellow LED on top of the display remains on (1H1C/2H2C models only), but the  icon disappears.

### 4.3 Fan Modes (Fan button)

The TH144 thermostat is equipped with a fan button offering two fan settings: On and Automatic.

- When On: (  ) the fan runs continuously.
- The Automatic setting allows the fan to run only during heating or cooling cycles.

### 4.4 Balance Point Cut-Off

The 2H1C et 3H2C models require the AC144-02 Remote Temperature Interface and the outdoor sensor to use this function.

This option allows the user to define the temperature setpoint at which the heat pump compressor will be cut-off and only the auxiliary heat will be used when heating is required.

The auxiliary heat is automatically activated on a call for heat when the outdoor temperature falls below the balance point. The heat pump compressor will be re-activated only when the outdoor temperature is at least 1°C (1°F) higher than the cut-off setpoint.

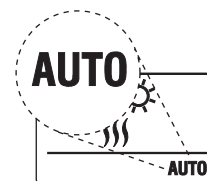
The default balance point cut-off is -8°C (17°F).

- 1 Press and hold **Heat/Cool** until the setpoint is displayed.
- 2 Use the  $\blacktriangle \blacktriangledown$  buttons to set the new balance point.
- 3 Press **Heat/Cool** to exit.

## 4.5 Automatic Changeover

When the AUTO mode (automatic changeover) is selected, the thermostat analyzes the system's requirements and automatically alternates between HEAT and COOL mode to provide occupant comfort.

There are two ways to use the automatic changeover mode:



### 4.5.1 Fixed Setpoint ( $\blacktriangle \blacktriangledown$ )

When you set the temperature using the  $\blacktriangle \blacktriangledown$  arrow buttons, the TH144 uses this unique temperature setpoint for temperature control.

The thermostat automatically switches to HEAT mode when the ambient temperature drops under the temperature setpoint whereas the COOL mode is activated when the temperature rises above the temperature setpoint.

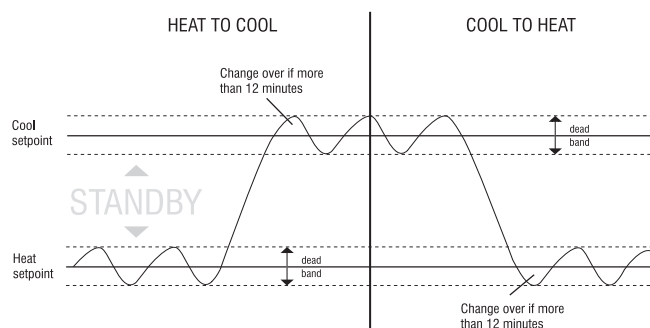
In order to switch modes, the ambient temperature must be maintained over or under the control band for more than 12 minutes.

### 4.5.2 Predefined Setpoint ( , or )

When a predefined setpoint button is selected, the TH144 uses the corresponding COOL and HEAT setpoint temperatures for temperature control.

The thermostat automatically switches to COOL mode when the ambient temperature rises above the COOL setpoint whereas the HEAT mode is activated when the ambient temperature drops below the HEAT setpoint.

In order to switch modes, the ambient temperature must be maintained over or under the setpoint control band for more than 12 minutes.



## 5 Technical Specifications

Power supply: 24 VAC

Maximum load: 1.5 A / 30 VAC per output

Remote input: dry contact, 24 VAC / 10 mA

Heat setting range: 5°C to 28°C (40°F to 82°F)

Cool setting range: 15°C to 35°C (60°F to 95°F)

Balance point setting range: -40°C to 5°C (-40°F to 41°F)

Temperature display (ambient): -9°C to 70°C (16°F to 158°F)

Temperature display (outdoor): -50°C to 70°C (-58°F to 158°F)

Temperature resolution (display): 1°

Accuracy:  $\pm 0.5^{\circ}\text{C}$  (0.9°F)

Anticipation: Electronic anticipation independent from the load

Controller: Deadband adaptive

Cycles: 15 or 20 minutes (at 50% operation)

Clock protection: 2 hours

Programming: protected memory

Dimensions (H/W/D): 4.94 x 3.83 x 1 inches (125.4 x 97.3 x 25.4 mm)

### Accessories

AC144-02 Remote temperature interface with 10-foot indoor/outdoor probe.

AC144-03 Indoor/outdoor probe with 10-foot cable.

CT240 Telephone controller with one low voltage 12 VDC output and one universal relay output (simultaneous operation). 9 VAC adapter and phone cable included.

CT241 Telephone controller with four universal relay outputs (independent operation). 9 VAC adapter and phone cable included.



## Warranty

AUBE warrants this product, excluding battery (if applicable), to be free from defects in the workmanship or materials, under normal use and service, for a period of three (3) years from the date of purchase by the consumer. If at any time during the warranty period the product is determined to be defective or malfunctions, AUBE shall repair or replace it (at AUBE's option).

If the product is defective,

- (i) return it, with a bill of sale or other dated proof of purchase, to the place from which you purchased it, or
- (ii) contact AUBE. AUBE will make the determination whether the product should be returned, or whether a replacement product can be sent to you.

This warranty does not cover removal or reinstallation costs. This warranty shall not apply if it is shown by AUBE that the defect or malfunction was caused by damage which occurred while the product was in the possession of a consumer.

AUBE's sole responsibility shall be to repair or replace the product within the terms stated above. AUBE SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. Some provinces, states or regions do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.

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## Technical Assistance



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