

1 Installation

1.1 Remove the old thermostat

- 1 Cut the power source to your heating or air conditioning system.
- 2 Remove the cover of the old thermostat.

CAUTION: If, upon removing the wall plate, you see that it is mounted on a junction box (similar to the junction box located behind an electrical switch or outlet), this may indicate that it is a 120-V / 240-V system. For more security, consult a qualified electrician to check the installation.

1.2 Install the new thermostat

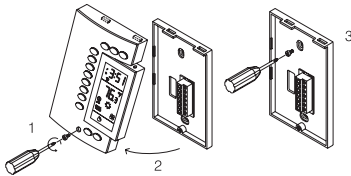
For a new installation, choose a location about 1.5 meters (5 feet) above the floor, with good air circulation. The thermostat must be installed on an inside wall.

Avoid locations where there are:

- air drafts (top of a staircase, air outlet,...)
- dead air spots (behind a door,...)
- direct sunlight
- concealed chimneys or stove pipes.

1.3 Install and connect the thermostat

- 1 Loosen the captive screw holding the faceplate to the mounting plate.
- 2 Pull the lower part to separate the faceplate from the mounting plate.
- 3 Fix the mounting plate onto the wall using the supplied screws.



1.4 Identify the wires

- 1 If the wall plate of your old thermostat has more than two wires coming out of the wall, you will need to label the wires. Start by identifying the letters close to each screw or terminal on which a wire is connected. These terminals may be located on either side of the plate.
- 2 Disconnect and identify each wire*.
- 3 You may need to tape the wires to the wall to keep them from falling back into it. If the wall opening is bigger than necessary, fill it with insulating wool in order to prevent the infiltration of warm or cold air behind the thermostat.

* If your installation is recent, the colour of the wires should match the identification on the mounting plate.

(Rh) Red	Heating power source
(W) White	Heating relay
(Rc) Blue	Air conditioning power supply
(Y) Yellow	Air conditioning relay
(G) Green	Fan relay

1.5 Connect the labelled wires to the thermostat

- 1 Connect the system wires to the thermostat terminals according to one of the wiring diagrams in section 1.6.
- 2 Make sure to return the remaining wire length into the wall.
- 3 If you own a CT240 telephone controller, refer to section 6.1 for connection.

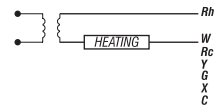
1.6 Wiring diagrams

The TH141 thermostat is compatible with most heating and air conditioning systems. Multi-level heating and air conditioning systems, Millivolt control heating systems, heat pumps and baseboard heating units are not compatible with this thermostat. Baseboard units can be connected using a 24-V relay.

1.6.1 2-wire heating system

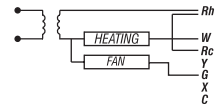
- 1 Connect the heating relay to terminal W.
- 2 Connect the 24-V transformer to terminal Rh.

In this case, the order of connection is unimportant.



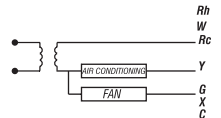
1.6.2 3-wire heating system with fan control

- 1 Connect the heating relay to terminal W.
- 2 Connect the fan relay to terminal G.
- 3 Connect the 24-V transformer to terminal Rh.
- 4 Connect a wire between terminals Rh and Rc.



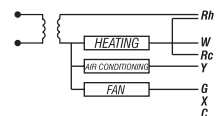
1.6.3 3-wire air conditioning system with fan control

- 1 Connect the air conditioning relay to terminal Y.
- 2 Connect the fan relay to terminal G.
- 3 Connect the 24-V transformer to terminal Rc.



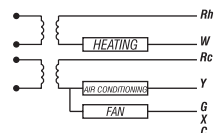
1.6.4 4-wire heating and air conditioning system

- 1 Connect the heating relay to terminal W.
- 2 Connect the air-conditioning relay to terminal Y.
- 3 Connect the fan relay to terminal G.
- 4 Connect the 24-V heating transformer to terminal Rh.
- 5 Connect a wire between terminals Rh and Rc.



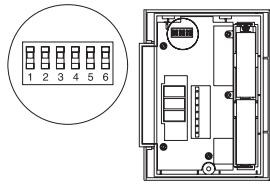
1.6.5 5-wire heating and air-conditioning system

- 1 Connect the heating relay to terminal W.
- 2 Connect the air-conditioning relay to terminal Y.
- 3 Connect the fan relay to terminal G.
- 4 Connect the 24-V heating transformer to terminal Rh.
- 5 Connect the 24-V air conditioning transformer to terminal Rc.



1.7 Thermostat configuration

Configure the thermostat using the DIP switches on the back side of the faceplate.



1.7.1 24 hr. or 12 hr. Display

The TH141 offers a 12 hr. or 24 hr. mode display. Default configuration of the display is in the 24 hr. mode. If you prefer a 12 hr. display, push switch #3 up.



1.7.2 Temperature in °C or °F

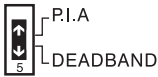
Default configuration of the TH141 is in °C. If you wish to change the temperature to °F, push switch #4 up. If you change from °F to °C (or vice versa), you will need to reprogram your comfort and economy settings.



1.7.3 Regulation Modes

You have a choice between two regulation modes:

- Proportional adaptive mode
- Conventional mode with anticipation



1. Proportional adaptive mode

If you want the proportional adaptive mode, push switch #5 up.

This mode analyses previous cycles to define the next duty cycle. This operating mode guarantees optimal regulation based on the capacity of your system. To avoid cycles that are too short for the heating or air-conditioning units, minimum On and Off duration is limited to 10% of the period (1.5 minutes for a 15 minute cycle).



Ideal for:

- Radiant or convection electrical heating system
- Circulator control in a hot water system
- Electrical hot air furnace
- Hot air, gas or fuel conventional furnace
- Air-conditioning system

Not recommended for:

- Gas or fuel furnace or boiler with wall chimney, if they include a combustion gas purging cycle exceeding 30 seconds. To verify this point, check the duration of the delay between the heating command sent by the thermostat and the moment when the burner actually goes on.
- Multi-zone systems, where several thermostats command a single heating or air-conditioning unit.

In the last two cases, the conventional mode is recommended.

Regulation Cycle Length

Set the length of the regulation cycles using switches #1 and #2. When cycles are very short, the temperature variation in the room is very low and the comfort level very high. However, very short cycles can generate premature wear of your system. It is therefore important to adjust the cycles to your type of installation. In general, the bigger your heating or air-conditioning unit, the longer the cycles should be.

- 5-minute cycle: For specific applications only
- 10-minute cycle: Radiant or convection electric heating
- **15-minute cycle: Central heating and air-conditioning unit**
- 20-minute cycle: Commercial unit



2. Conventional mode with anticipation

If you want the conventional mode with anticipation, push switch #5 down. This mode maintains the temperature within the programmed span. This mode is compatible with all heating or air-conditioning systems.



Programmable Span

Use switches #1 and #2 to select the appropriate temperature span.



0.3 °C/0.5 °F



0.5 °C/0.9 °F



0.4 °C/0.7 °F



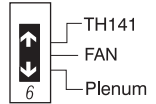
0.6 °C/1.1 °F

Variations	Hot-Water Heating	Heating and Air-conditioning
0.3 °C/ 0.5 °F	For specific applications only	For specific applications only
0.4 °C/ 0.7 °F	Gas or electric wall furnace	Radiant or convection electric heating *
0.5 °C/ 0.9 °F	Fuel or gas floor furnace	Central heating or air-conditioning unit
0.6 °C/ 1.1 °F	Commercial unit	Commercial unit

* 240 volt heating with relay (baseboard, convactor, radiant ceiling, etc.)

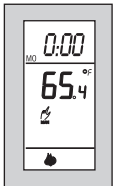
1.7.4 Heating Fan Control

This function determines whether the heating system fan is operated by the thermostat or by the plenum's temperature of the heating unit. In general, the fan is operated by the heating unit. However, if the fan does not turn on and the thermostat requires heating for more than one minute, push switch #6 up.



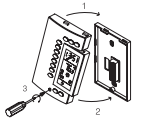
1.8 Battery installation

When you first install the batteries in the TH141, the unit runs a sequence of tests and a complete reset to zero, which last approximately 5 seconds. The screen should display the time and the day, as well as the current temperature as follows:



It is normal for the displayed temperature to be higher than the room temperature if you are holding the TH141 in your hands. It will return to normal about one hour after installation on the wall. Mount the thermostat on the wall plate and screw it in place.

Even if the thermostat indicates that the batteries are still good, it is recommended to replace them once a year, at the beginning of the cold season.



2 Entry of basic data

You may program the thermostat while holding it in your hands or when it is mounted on the wall.














2.1 Programming the time and day

- 1 Set the time using the **Hour** and **Minute** buttons.
- 2 Set the day using the **Day** button.


2.2 Programming the comfort, economy and vacation settings

The Comfort ☀, Economy ☾ and Vacation ■ settings respectively represent the temperatures that you wish to have during the day ☀, at night ☾ or while you are away at work ☾, or while you are away for an extended period ■. Since your thermostat controls both heating and air-conditioning, and since the economy settings are the opposite in both cases (reduction for heating temperature, increase for air-conditioning), you must program the settings for heating and then for air-conditioning.

2.2.1 Program the heating settings

- ❶ Set your thermostat to the heating mode  using the **Heat/Cool** button.
- ❷ To program the Comfort temperature, select the desired degree using the   buttons and press the  button until the  icon is displayed (approximately 3 seconds).
- ❸ To program the Economy temperature, select the desired degree using the   buttons and press the  button until the  icon is displayed (approximately 3 seconds).
- ❹ To program the Vacation temperature, select the desired degree using the   buttons and press on the  button until the  icon is displayed (approximately 3 seconds). This setting is used by the telephone remote control.

2.2.2 Program the air-conditioning settings







Set your thermostat to the air-conditioning mode  using the **Heat/Cool** button and repeat steps 2 to 5 of section 2.2.1.

3 Operating modes




The TH141 offers two operating modes.

3.1 Manual ()

This mode allows you to maintain a constant temperature in the house.

- ❶ To activate this mode, press the **Manual/Auto** button to display the  icon.
- ❷ Set the desired temperature by pressing the   buttons or by briefly pressing the ,  or  button.





3.2 Automatic ()

This mode executes your own programming. To activate this mode, press the **Manual/Auto** button to display the  icon. The  or  icon indicates that the program setting is active.

3.2.1 Schedule programming

The TH141 allows 4 setting changes for each day of the week. There are no pre-set programs. The programs are tailored to perfectly adapt to your life style.

The principle is very simple. For each day, enter the time at which you wake up (P1), the time you leave for work (P2), the time you arrive back home (P3) and the time you go to bed (P4).

Program	Mode	Time
1		Wake-up time
2		Leaving time
3		Return time
4		Bed time

NOTE: For temperature increases (Program 1 and 3), allow at least 15 minutes per °C. If you have lowered the temperature by 3 °C during the night and you wake up at 7 AM, change the setting at 6:15 AM.

For savings to be obtained, 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.

Example: If your system takes one hour to go from your saving temperature level to your comfort temperature level, it is useless to lower the temperature for a period of 2 to 3 hours.

a) To Program your Schedule



- ❶ Press the **Program** button to access the programming mode.
- ❷ Press the **Day** button to select the day to be programmed. You can select all days of the week by pressing on the **Day** button for 3 seconds.

- ❸ Press the **Program** button to select program 1, 2, 3 or 4.
- ❹ Press the **Hour** and **Minute** buttons to program the time.
- ❺ When you have completed your programming, press the **Manual/Auto** button to exit this function.

b) To Erase a Program

Select the program using the **Program** and **Day** buttons, and press the **Clear** button. The time zone displays --:-- when the program is inactive.


c) Example 1: Comfort period from 7:00 AM to 10:30 PM
Economy period from 10:30 PM to 7:00 AM
Identical schedule for all days of the week

- ❶ Press the **Program** button to access the programming mode.
- ❷ Press the **Day** button for 3 seconds to select every day of the week.
- ❸ Press the **Hour** button to enter 7:00 AM, Program 1 .
- ❹ Press the **Program** button again to select Program 2 , and press the **Hour** and **Minute** buttons to enter 10:30 PM.
- ❺ Press the **Manual/Auto** button to exit this function.

d) Example 2: Comfort period: Monday to Friday from 6:15 AM to 8:15 AM and from 5:00 PM to 10:00 PM
Saturday and Sunday from 7:30 AM to 11:00 PM

Schedule/Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
PROG. 1	6:15 AM	6:15 AM	6:15 AM	6:15 AM	6:15 AM	7:30 AM	7:30 AM
PROG. 2	8:15 AM	8:15 AM	8:15 AM	8:15 AM	8:15 AM	----	----
PROG. 3	5:00 PM	5:00 PM	5:00 PM	5:00 PM	5:00 PM	----	----
PROG. 4	10:00 PM	10:00 PM	10:00 PM	10:00 PM	10:00 PM	11:00 PM	11:00 PM

NOTE: It is faster to program the same schedule for every day and then modify the exception days.






- ❶ Press the **Program** button to access the programming mode.
- ❷ Press the **Day** button for 3 seconds to select every day of the week.
- ❸ Press the **Hour** and **Minute** buttons to enter 6:15 AM (Program 1 .
- ❹ Press the **Program** button to select Program 2 and the **Hour** and **Minute** buttons to enter 8:15 AM.
- ❺ Repeat step 4 to enter Program 3 (5:00 PM) and Program 4 (10:00 PM).

NOTE: When making modifications, make sure that you are in the right program.

To modify the Saturday and Sunday schedules:

- ❶ Press the **Day** button until SA or SU is displayed.
- ❷ Press the **Program** button to select Program 1 and the **Hour** and **Minute** buttons to enter 7:30 AM.
- ❸ Press the **Program** button to select Program 2 and then press the **Clear** button to erase it.
- ❹ Press the **Program** button to select Program 3 and then the **Clear** button to erase it.
- ❺ Press the **Program** button to select Program 4 and then the **Hour** and **Minute** buttons to enter 11:00 PM.
- ❻ Press the **Manual/Auto** button to exit this function.

3.2.2 Temporary or permanent temperature bypass

This operation allows you to temporarily modify the room temperature while you are in the automatic mode. Simply press the   buttons to select the desired temperature, or the  or  button to select the Comfort or Economy settings you have programmed. This temperature will be maintained until the beginning of the next programmed schedule. You can also switch to the Vacation setting for a prolonged absence by pressing the  button. In that case, the derogation is permanent. To return to the normal operating mode, press the **Manual/Auto** button. If you wish to immediately return to the programmed settings, press the **Manual/Auto** button twice.

4 Select the heating, air conditioning, or mixed mode

Use the **Heat/Cool** button to select one of the following modes:

- Heating: Controls the heating unit.
- Air-conditioning: Controls the air-conditioning unit.
- Mixed: The TH141 analyzes the temperature pattern and automatically alternates between heating mode and air-conditioning mode.

To avoid needless switching, the automatic mode change will take at least 2 minutes if it is required by a manual setting change and at least 15 minutes if it is due to a quick temperature change.

Furthermore, to protect your heating and air-conditioning system, it is impossible to shut down and restart the system within a period equal to 10% of the cycle.

5 Fan control

Use the **Fan On/Auto** button to force continuous air circulation (* appears) or to synchronize the fan with the heating or air-conditioning demand (* disappears).

Please note that if you set the TH141 in Vacation mode using the telephone controller or a house automation system, the continuous air circulation will be automatically deactivated during your absence.

6 Telephone controller (■)

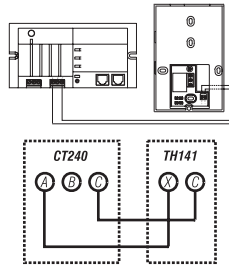
The TH141 incorporates a telephone controller interface which allows you to switch from the normal operating mode to the Vacation setting (■), and vice versa, using the telephone keypad (stationary or portable). You can, for example, heat your country house from your office on Friday, or your house from the airport or from your car on your way back from vacation.

6.1 Connection to the CT240

The TH141 is designed to connect directly to the CT240 telephone controller. This combination allows the activation and deactivation of the Vacation mode from the CT240 or the telephone.

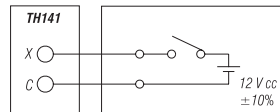
Connect the CT240's terminals A and C to the TH141's terminals X and C respectively. You must respect the polarity.

For details on operating the telephone controller, refer to the CT240's Instruction Manual.



6.2 Connection to a house automation system

The Vacation setting can also be activated from a house automation system.



6.3 Operating the telephone interface

You can activate the Vacation setting using the Vacation button of the telephone controller or using the telephone itself.

- 1 To activate the Vacation setting, press the Vacation button of the CT240. The Vacation setting will be displayed on the thermostat during 5 seconds and the ■ icon will flash on the screen. You no longer have access to the TH141 keypad if this function is activated by the telephone controller.
- 2 To deactivate the function and return to the previous mode, press the Vacation button of the telephone controller again. The red light will go off and the ■ icon will disappear from the thermostat within a maximum of 5 seconds.

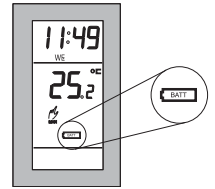
To modify the Vacation setting, refer to section 2.2.

7 Battery replacement

The TH141 will display an icon indicating that the batteries must be replaced. This icon will flash for 60 days. After this delay, the thermostat will shut down your heating unit. During battery replacement, the data is kept for of 15 seconds. The time and the programs will not be lost.

After this delay, the TH141 runs a sequence of tests and a complete reset to zero as for the initial installation of the batteries.

Even if the thermostat indicates that the batteries are good, it is recommended to replace them once a year.



8 Technical specifications

Power supply:	2 AA size alkaline batteries
Connection:	2, 3, 4 or 5 wires
Maximum load:	1.5 A/30 VAC per output
Auxiliary input:	12 VDC ± 10%, 2.3 mA
Number of programs:	4 programs/day, 28 programs total
Heating setting range:	5 °C to 30 °C (40 °F to 85 °F)
Air-conditioning setting range:	16 °C to 40 °C (60 °F to 105 °F)
Anticipation:	electronic anticipation independent of the load
Regulation:	proportional or conventional
Regulation periods:	5, 10, 15 or 20 minutes

Warranty

Resideo warrants this product, excluding battery, to be free from defects in workmanship or materials, under normal use and service, for a period of five (5) years from the date of first purchase by the original purchaser. If at any time during the warranty period the product is determined to be defective due to workmanship or materials, Resideo shall repair or replace it (at Resideo'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) Customer Care will make the determination whether the product should be returned to the following address: Resideo Return Goods, 1985 Douglas Dr. N., Golden Valley, MN 55422, 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 Resideo that the defect was caused by damage which occurred while the product was in the possession of a consumer.

Resideo's sole responsibility shall be to repair or replace the product within the terms stated above. RESIDEO 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.

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