

REPLACEMENT COMPONENTS DIVISION® CARRIER CORPORATION

www.totaltouch.info

Technical Support: 1-866-90TOUCH (1-866-908-6824)

Physical Dimensions

Case: 5.75" x 4.75" x 1.25"
(145mm x 120mm x 30mm)
Display: 3.625" x 2.125"
(95mm x 55mm)

HVAC Control Card

Case: 4.50" x 3.45" x 0.825"
(114 mm x 87 mm x 21mm)

Electrical Rating

24 volt AC/DC

Class 2 maximum 4 amps

Temperature Accuracy
+/-1°F degree

Power failure protection safeguards
clock and memory.



FCC Statement THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

US PatentS 7,050,026 | 7,028,912 | 6,902,117 | 6,786,421 Other Patents Pending

TotalTouch™ www.totaltouch.info

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INSTRUCTION MANUAL

P286-1600 2 Heating and 1 Cooling
2 Wire Touch Screen Thermostat with HVAC Control Card





TotalTouch™ *Complete Comfort*

P286-1600 Loaded with features, your TotalTouch™ thermostat provides comfort, ease of use in a package that works for you.

P286-1600 - all in an easy to use and install application that works in a variety of installations where no common wire is available.

True touch screen technology offers responsive action, clear and easy to read LCD display that works in all lighting conditions. All with proven reliability backed by the world's largest manufacturer of air conditioning and heating equipment.



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Anticipator control – Anticipator control is used to turn off the heating equipment before the room temperature actually reaches the cut-out point.

Cut-in Point – The air temperature at the thermostat at which it initiates action of heating/cooling equipment.

Cut-out Point – The air temperature at the thermostat at which it terminates action of heating/cooling equipment.

Cycle rate – Cycle rate is the frequency that heating or cooling equipment is turned on during a certain period of time. Cycle rate is often given in units of cycles per hour (CPH).

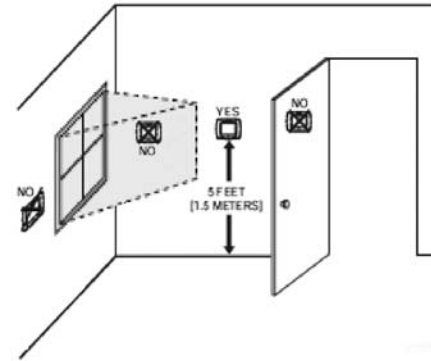
Differential – Differential is defined as the difference between the cut-in and cut-out points as measured at the thermostat under specified operating conditions. For example, if the thermostat turns the heating equipment on at 70 degrees F and turns the heating equipment off at 74 degrees F, then the differential is 4 degrees F.

Programmable thermostat – A thermostat with the capability of automatically adjusting temperature set point to pre-selected settings at pre-selected times.

Setback – The automatic alteration of the thermostat control point(s) by means other than manually changing the temperature set point.

Set point – The desired temperature setting on an electromechanical or electronic thermostat.

Install your TotalTouch™ thermostat approximately 5 feet (1.5 meters) above the floor in an area with good air circulation.



Avoid the following locations:

- Hot or cold air from ducts
- Radiant heat for appliances or sun such as a skylight
- Unheated areas or uncooled areas:
for example an outside wall behind the thermostat.

MOUNTING TOTALTOUCH™ TO THE WALL

1. Make sure to turn off the power supply located at the electrical service panel. All heating and cooling units should be OFF.

2. Remove the cover plate by pulling up the cover from the left or right side only.

3. Align the thermostat unit to the wall.

4. Mark the two locations for drilling the 3/16" holes required for the plastic screw anchors.

5. Remove the thermostat and drill the two 3/16" holes in these locations.

6. Insert the plastic gyproc screw anchors and tighten them securely.

7. Make the appropriate wire connections based on the specifications of the household HVAC unit(s). Please refer to Wiring Table to determine the appropriate wire connections.

8. Securely mount the thermostat unit to the wall with the two supplied screws.

9. Fit the cover plate back by clipping one side first (left or right) and then push down on the opposite side.

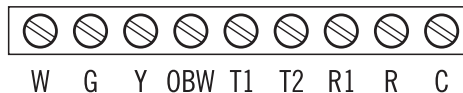
10. Turn on the electricity at the electrical service panel.



WIRING TABLE

HVAC CONTROL CARD

COMM



TERMINAL	EQUIPMENT
G	Fan
Y	Compressor
OBW	OB Valve or Second Stage Furnace
W	Furnace
T1	Connection to the Thermostat
T2	Connection to the Thermostat
R1	Power
R	Power for W only
C	Power



INSTALLING THE HVAC CONTROL CARD

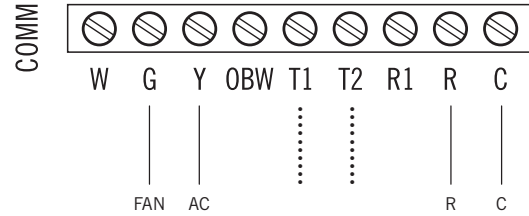


... P286-1600 2 Heating and 1 Cooling for 2 Wire Installation with HVAC Control Card

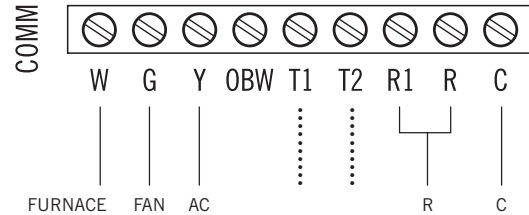
- WIRING THE HVAC CONTROL CARD AT THE EQUIPMENT - CHOOSE YOUR INSTALLATION:

INSTALLING THE HVAC CONTROL CARD

ONE AIR CONDITIONER

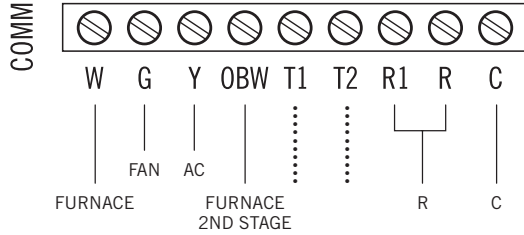


ONE AIR CONDITIONER & ONE HEAT

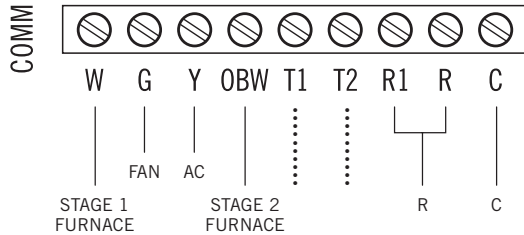


INSTALLING THE HVAC CONTROL CARD

ONE AIR CONDITIONER & TWO HEAT

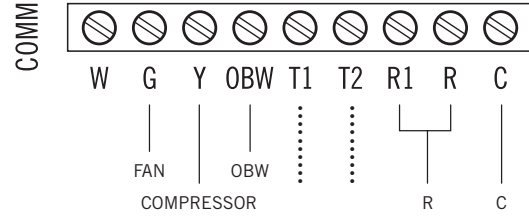


ONE AIR CONDITIONER & TWO STAGE FURNACE

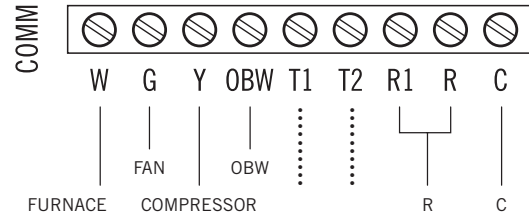


INSTALLING THE HVAC CONTROL CARD

ONE HEAT PUMP

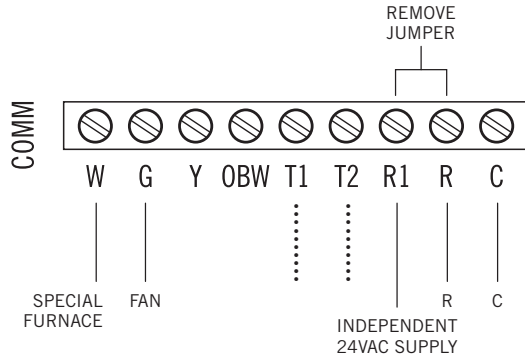


ONE HEAT PUMP & ONE HEAT



INSTALLING THE HVAC CONTROL CARD

FURNACE WITH INDEPENDENT 24VAC SOURCE



THERMOSTAT AND HVAC CONTROL CARD

- **Then Connect the T1 and T2 to the thermostat**
You can connect without worry of polarity



... The P286-1600 was developed with diagnostic tools on board to ensure an easy installation, and to save on steps between the HVAC equipment and the thermostat.

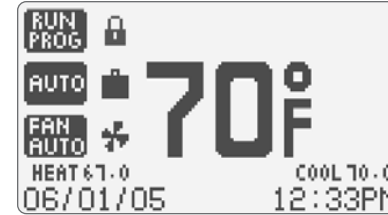
- Upon connection if the **COMM Indicator Light** is steadily lit, it signifies a positive connection.
- If the **COMM Indicator Light** is pulsing (flash, flash, flash, flash and continuously on), it signifies that the two wires are open and that the thermostat does not have power.

Solution: Check wire.

- If the **COMM Indicator Light** is pulsing (steady flash on, flash off) it signifies that the two wires are shorted and there is no signal.

Solution: Check wire and use voltmeter to check the voltage.

- If the **COMM Indicator Light** is pulsing fast (flash on, flash off) it signifies that the data from the thermostat is invalid. This rarely will occur, and only if the 2 wire connection is extremely long and noisy.
- If any of the above does occur, all relays will be turned off one by one for automatic protection.



... To return to the Home Page, simply touch icon at any time!

- 1 Current Room Temperature
- 2 °F/°C Indicator
- 3 Thermostat Control Mode: Run Program or Hold Temperature
- 4 Temperature Control Mode: Auto, Heat and Cool
- 5 Fan Operation Mode: Fan Automatic, Fan Intermittent, Fan Off
- 6 Fan Operation Indicator
- 7 Heat Setpoint and Cool Setpoint
- 8 Date Stamp (Month/Day/Year)
- 9 Time: Choose between 12 hour or 24 hour clock


... Now that you know the basics let's review the Control Page - and begin to learn about all the unique features!



CONTROL PAGE



... The TotalTouch™ Control Page provides you with an easy and intuitive screen to set your thermostat- all functions are available at the touch of a finger! To access the Control Page, simply touch the Home Page Screen... anywhere!

- 1 Current Room Temperature
- 2 Thermostat Control Mode: Run Program or Hold Temperature
- 3 Temperature Control Mode: Auto, Heat, Cool and Off
- 4 Fan Operation Mode; Fan Automatic, Fan Intermittent, Fan Off
- 5 Menu Page – Access all program features with this button
- 6 Temperature Control Mode: Heat and Cool temperature set points allows you to change, raise or lower set point as desired. In “Auto” mode touch the Heat/Cool button (Heat or Cool will flash once selected), then raise or lower set points as desired.
- 7 Displays Installer Message: review important information 
- 8 Returns to the Home Page



THERMOSTAT OPERATION MODE



- Your TotalTouch™ thermostat can run in Program Mode or can hold a fixed temperature.
- **RUN PROGRAM:** Your custom program settings will be initiated - 4 events per day including the fan mode
- **HOLD TEMPERATURE:** Allows you to raise or lower the temperature setpoint by touching the heat/cool - to lower + to raise






- **AUTO, HEAT, COOL AND OFF**

Based on your HVAC equipment you can quickly and easily select the mode of operation - Automatic • Heat • Cool • Off

- Auto – choose your heat and cool temperature setpoints – the temperature will automatically adjust according to the requirement
 - Heat – choose your Heat setpoint
 - Cool – choose your Cool setpoint
 - OFF - no heating or cooling
- **PROGRAM TEMPERATURE SETPOINTS:**
 - Choose Heat: Heat will appear with a temperature range, select your temperature
 - Choose Cool: Cool will appear with a temperature range, select your temperature
 - Choose AUTO: A combined heat/cool button will appear – when heat flashes – choose your temperature setpoint, touch the button to toggle to cool, then set your temperature setpoint.



- There are three modes of fan operation: Fan Auto, Fan On, Fan Off. When the fan is running, the animated fan icon will appear on the Home Page. 
- **FAN AUTO:** The fan will run on only when there is a demand for heating or cooling.
- **FAN ON:** The fan runs continuously
- **FAN INTERMITTENT:** The fan will run 10 minutes per 1/2 hour providing a convenient way to improve air quality and save energy.



... To access the Menu Page, simply touch Menu from the Control Page. Remember it is as easy as a touch of the button.

- Set-up of your TotalTouch™ Thermostat is effortless with intuitive menu driven programming - on our patented touchscreen.
- Enter **Date and Time Settings**: Program 7 days with 4 events per day to improve efficiency and reduce energy costs
- **Energy Watch**: display kWh consumption as well as the dollar cost of the HVAC System - configure this feature in Advanced Settings
- **Clean the Screen** without worry
- Access the **Set Screen** menu
- **Advanced Settings** for configuration of equipment
- **Vacation Mode**
- View **Filter Monitor**
- Activate the **Humidify/De-humidify** Function



- Select the 12 or 24 hour clock display.
- Set the time of day by choosing hour and minute buttons.
- Set the Month, Day and Year by choosing the buttons.

MENU PAGE - PROGRAM SETTINGS



- **PROGRAM SETTINGS:** This feature easily and quickly programs your thermostat to fit your needs and lifestyle. Remember by programming the thermostat you can increase energy efficiency and reduce energy.
 - 7 Day Programmable with 4 events per day including Fan Mode
 - Select the Day of the Week
 - Select the Event number: for example 1
 - Select the Start Time: for example 7:00 AM
 - Choose desired temperature setpoint – by raising or lowering the heat/cool button
 - Choose the next event: for example 2 and repeat the steps

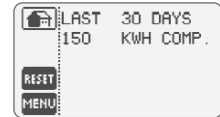
Once you have set all the events for one day you may copy the same settings to other days of the week. First ensure that your program settings are correct. Then select the next day of the week that you would like to have the same program setting. TotalTouch™ will then prompt you to copy the settings. Remember that you must choose RUN Program from the control page to activate this feature.



ENERGY WATCH



- **ENERGY WATCH:** This unique and patented feature provides a display of system energy consumption and the cost of running your HVAC system. This feature must be activated in the ADVANCED SETTINGS of the Thermostat - page 38.



SCREEN OPTIONS



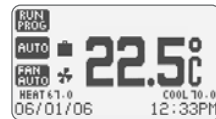
- **CLEAN SCREEN:** This function allows you to safely wipe and clean the screen with a dampened cloth without accidentally changing any of the settings; it places the TotalTouch™ screen in a sleep mode for 15 seconds.
- **SET SCREEN:** Your TotalTouch™ thermostat has a number of options to ensure clear viewing throughout the day and night, firstly;
 - Backlight: choose between Auto or ON
 - Reverse: Choose between a dark background (ON) or light background (OFF)
 - Night Reverse: Another patented feature – ON: at 9PM the screen automatically reverses the background for comfortable viewing at night – at 6:00AM it returns to the Normal Mode for clear daytime viewing. OFF: screen background determined by "Reverse" function setting.
 - Contrast: Provides a range from 1 – 10 to lighten or darken the screen best suit your surroundings – we advise the setting of 7.



VACATION MODE



- **VACATION SETTINGS:** Allows you to set the temperature to a fixed setpoint during the time you are on vacation, providing energy savings and comfort for your return home. **IMPORTANT:** Heat or Cool must be selected from the Control Page before entering the Vacation Settings page. To begin select Vacation Mode ON:
 - Select the Start Date
 - Select the End Date
 - Adjust the Heat or Cool temperature setpoint: the Vacation mode begins at 10 PM on the day of your departure and ends at Midnight on the day of your arrival.
 - When the Vacation mode is active the suitcase icon will appear on the HOME PAGE. Upon your return from vacation, a message *Vacation Mode Ended* will be displayed on the screen. Simply touch the screen to acknowledge the message, and your TotalTouch™ thermostat will automatically revert to the Program Settings if you are in Run Program Mode or you can choose to Hold Temperature to raise or lower the setpoint.



MENU PAGE



- **FILTER MONITOR:** Displays filter usage in days and resets filter timer – when activated the FILTER MONITOR icon will appear on your HOME PAGE – this feature must be activated in ADVANCED SETTINGS.

MENU PAGE - ADVANCED SETTINGS



⚡ IMPORTANT INSTALLER SET-UP

This TotalTouch™ thermostat works with many different HVAC systems – Gas, Oil, Electric Heat Pump, 2 Stage Heat Pump, 2 Stage Furnace and Compressors. You must enter this menu to configure the thermostat with HVAC operating equipment, and to fully customize the thermostat.

ADVANCED SETTINGS: To begin, hold your finger for 5 seconds on the Advanced Settings Button – you will hear a beep telling you that you are in the process of entering this feature.

A warning message will appear:

**CAUTION: INCORRECT CONFIGURATION
CAN DAMAGE YOUR SYSTEM, CONTINUE?
YES NO
ACCEPT – YES**

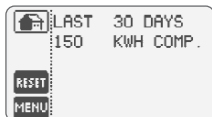




- HOME BUTTON:** Returns you to the Home Page at anytime- remember you will have to re-enter through the ADVANCED SETTINGS button.
- DAYLIGHT TIME :** Choose Daylight Time On or Off dependent on your Time Zone.
- FILTER:** A Helpful reminder to change or clean your air filter. The Filter Monitor function indicates how many days of "fan run time" the air filter has been used. Reset it each time after changing your air filter.

- ENERGY WATCH:** By entering the HVAC system consumption parameters rounded off to kW, you will have a real time total of kilowatts and cost of consumption. To review touch the Energy Watch button on the Menu Page. EXAMPLE: Fan 1kW, Heat Pump 1kW/ton, Furnace 5-30 kW, 7-9¢/kW

- This feature will run consecutively for 255 days. If you do not enter your information what will appear on the display is the total time the Compressor and the Furnace have been operating.



- °F:** Choose between display units of Fahrenheit or Celsius for thermostat temperature
- SECURITY:** The security settings allow you to protect your TotalTouch™ thermostat from unauthorized use, and provides 2 levels of security. On your HOME PAGE once this feature is activated you will see a small lock icon.
 - Turn Security On or Off – the Factory Setting PIN is 1111
 - As a first time user you will be prompted to enter the Factory Setting PIN 1111
 - Enter your new PIN and then Re-enter your new PIN once more.
 - There are two modes of password protection: Full Lock Function does not allow any changes unless the user enters the PIN. Partial Lock Function allows you to change only the temperature setpoint without entering a PIN.



- INSTALLER MESSAGE:** (up to 42 characters) to appear at programmable intervals. Enter your message on the screen using the keyboard – for example service reminders or emergency contact information. Type your message in using the keyboard, upon completion choose OK. Set the number of months after which you wish the message to appear. Touch the home or menu icon to exit.

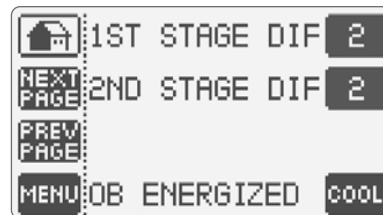




❖ **IMPORTANT: BY INADVERTENTLY MODIFYING COMPRESSOR AND FURNACE SETTINGS, YOU MAY SERIOUSLY DEGRADE SYSTEM PERFORMANCE.**

❖ **CHOOSE SYSTEM HEATING AND/OR COOLING EQUIPMENT – REMEMBER ALL YOU NEED TO DO IS TOUCH THE BUTTON WITH YOUR FINGER.**

- 1 Choose Heat Pump, 2 Stage Heat Pump, Air Conditioning, No Compressor – please review the wiring table and diagram for wiring instructions.
- 2 Choose Furnace Off (No Furnace), Electric Furnace, Emergency Electrical Furnace (additional electric furnace which will come on in emergency mode in conjunction with electric furnace), Gas Furnace, Oil Furnace, and 2 Stage Gas Furnace; please review the wiring table and diagram for wiring instructions.
- 3 **CYCLE RATE:** Set the minimum difference between Auto Mode, Heat and Cool temperature set points.
- 4 **AUTO CHANGE:** Set Maximum compressor cycles per hour.



❖ **THE P286-1600 ALLOWS YOU TO CONTROL UP TO 2 STAGES OF HEATING AND 1 STAGE OF COOLING, DEPENDENT ON THE TYPE OF SYSTEM YOU HAVE CONFIGURED.**

- 1 **1ST STAGE DIFFERENTIAL:** Set temperature difference between temperature set point and actual temperature reading before 1st stage heating or cooling is initiated.
- 2 **2ND STAGE DIFFERENTIAL:** Set temperature difference between 1st stage initiation and 2nd stage heating or cooling initiation.
- 3 **OBW ENERGIZED:** Reverses the Heat Pump OBW Valve contact to HEAT or COOL (manufacturer dependent).



ADVANCED SETTINGS – TIMER FEATURE



- Specify the number of minutes for which Stage 1 will function until Stage 2 is activated to help raise (or cool) temperature (if the temperature set point is not reached). This unique function avoids excess compressor wear in the case where the necessary temperature set point is not met through setting of the Staging Differentials. Set to "00" to disable.



ADVANCED SETTINGS – HEAT PUMP



- HP "ON" when Furnace On: Heat Pump and Furnace can operate together when 2nd stage furnace is required. HP "OFF" when Furnace On: turns off the Heat Pump when the furnace is On (required on some gas or oil furnaces).





→ CALIBRATION OF TEMPERATURE

Your TotalTouch™ Thermostat is rated for an accuracy of +/-1 degree with temperature

- If you have determined due to drafts, sunlight or other environmental factors that your thermostat needs calibration, follow this easy guide. Common causes of off-set are lack of air circulation in the vicinity of your TotalTouch™ unit or skylights.



→ TEMPERATURE CALIBRATION TABLE

- Firstly, determine with a calibrated thermometer the temperature difference – then use the following table to adjust your thermostat.

Thermostat Calibration Number	Fahrenheit Change	Celsius Change
+3.0	+6F	+3.0C
+2.5	+5F	+2.5C
+2.0	+4F	+2.0C
+1.5	+3F	+1.5C
+1.0	+2F	+1.0C
+0.5	+1F	+ .5C
Factory Setting	00	No Correction Required
-0.5	-1F	-.5C
-1.0	-2F	-1C
-1.5	-3F	-1.5C
-2.0	-4 F	-2.0C
-2.5	-5F	-2.5C
-3.0	-6F	-3.0C



Simple Mode has the following basic features:

Temperature Control Modes:



Fan Operation Modes:



... ❖ **TOTALTOUCH™ CAN ALSO FUNCTION AS A NON-PROGRAMMABLE THERMOSTAT AFTER IT HAS BEEN CONFIGURED.**

- To enable “Simple Mode”, press the reset button (take off the thermostat face-plate and press the reset button located in the bottom right-hand corner). The message “Touch for simple thermostat” will appear. Touch the screen, and TotalTouch™ becomes a simplified non-programmable thermostat.
- Please note that when changing to Simple Mode, you will not lose any of the settings you have previously entered in the “Programmable Mode”.
- To revert back to the Programmable TotalTouch™ Thermostat, simply press the reset button and touch the screen when the message “Touch for Programmable Thermostat” appears.



- **Touch screen buttons do not function properly.** Remove cover, press the reset button located in the bottom left corner then accurately touch 3 target centers on the screen when prompted.
- **Air Conditioning does not turn on even when room temperature is higher than the temperature set point set point (Humidity models only).** DHCONTROLCOMP is turned ON and dehumidify set point has been reached. This will cause air conditioning to turn off. Lower Setpoint – Page 26, Dh CONTROLCOMP – Page 45.
- **Air conditioning turns on in HEAT mode and heating turns on in COOL mode.** Reverse the OBW valve (see “Advanced Settings” Page 42).
- **PARTIAL LOCK and FULL LOCK do not function.** You must not touch the screen for 1 minute for TotalTouch™ to automatically lock.
- **I forgot my PIN and cannot unlock the thermostat.** Remove the cover plate, press the reset button located in the bottom right corner, as soon as the message “touch to reset password” appears touch the screen, your PIN will be erased and the thermostat will unlock.



LIMITED WARRANTY

Hardware

Replacement Components Division® Carrier Corporation warrants the original end user ("Customer") that new TotalTouch™ branded products will be free from defects in workmanship and materials, under normal use, for five (5) years from the original purchase date.

Software

Replacement Components Division® Carrier Corporation warrants to Customer that the TotalTouch™ thermostat software will perform in substantial conformance to its program specifications for a period of five (5) years from the date of the original purchase.

Exclusions

This warranty excludes (1) physical damage to the surface of the product, including cracks or scratches on the touch-screen or outside casing; (2) damage caused by misuse, neglect, improper installation, unauthorized attempts to open, repair, or modify the product, or any other cause beyond the range of intended use; (3) damage caused by accident, fire, power changes, other hazard, or Acts of God; or (4) use of the product with any device if such device causes the problem.

Exclusive Remedies

Should a covered defect occur during the warranty period and Customer notifies Replacement Components Division® Carrier Corporation, Customer's sole and exclusive remedy will be, at Replacement Components Division® Carrier Corporation's sole option and expense, to repair or replace the product. Replacement products or parts may be new or reconditioned or a comparable version of the defective item. Replacement Components Division® Carrier Corporation warrants any replaced product or part for a period of ninety (90) days from shipment, or through the end of the original warranty, whichever is longer.

Obtaining Warranty Service

Customer must contact and return product to a local Replacement Components Division® Carrier Corporation product dealer or installer within the applicable warranty period to obtain warranty service. Dated proof of original purchase will be required. Replacement Components Division® Carrier Corporation will not be responsible for Customer's memory data contained in, stored on, or integrated with any products returned to Replacement Components Division® Carrier Corporation for repair, whether under warranty or not.



LIMITED WARRANTY

Warranty Exclusive

THE FORGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY REPLACEMENT COMPONENTS DIVISION® CARRIER CORPORATION AND ITS SUPPLIERS.

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