



fact[®]
HVAC PARTS



INSTRUCTION MANUAL

TS21



2 Heating and 1 Cooling

WELCOME TO



Flexible applications - Universal and easy to install in residential or commercial environments.

Advanced features - Precision electronics provide premium comfort and temperature accuracy +/- 1 degree F.

Simple to use - Set and Forget with an easy to use menus so straightforward no instruction manual is needed. 7 day Programmable with 4 events each day including fan.

Technology that works for you - Easy to use, easy to see touchscreen



**ALL BACKED WITH A 2 YEAR WARRANTY
OVER THE COUNTER.**

MOUNTING THE THERMOSTAT 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 Diagram 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



| CONFIGURATION | Y1 | Y2 | W2 | OB/W | R/C | R/H | G |
|---------------------|-----------|-----|-----|------|-----|-----|---|
| Cooling Only | | | | | | | |
| Air Conditioner | Furn. Off | AC | | | x | x | x |
| 2 Air Conditioner | Furn. Off | AC1 | AC2 | | x | x | x |

| | | | | | | | | |
|---------------------|------------------|--|----------------|---------|-----------|---|---|---|
| Heating Only | | | | | | | | |
| No Compressor | Electrical Furn. | | | El.Furn | El.Furn2* | x | x | x |
| No Compressor | Emg. El. Furn. | | Emg. El. Furn. | El.Furn | El.Furn2* | x | x | x |
| No Compressor | Gas | | | Gas | Gas2* | x | x | x |
| No Compressor | Oil | | | Oil | Oil2* | x | x | x |
| No Compressor | 2 Stage Gas | | | Gas1 | Gas2 | x | x | x |

* if there is another furnace, then connect it to OB/W relay.

1 Stage Cooling, 1 Stage Heating

| | | | | | | | | |
|-----------------|------------------|----|----------------|---------|----|---|---|---|
| Heat Pump | Furn. Off | HP | | | OB | x | x | x |
| Air Conditioner | Electrical Furn. | AC | | El.Furn | | x | x | x |
| Air Conditioner | Emg. El. Furn. | AC | Emg. El. Furn. | El.Furn | | x | x | x |
| Air Conditioner | Gas | AC | | Gas | | x | x | x |
| Air Conditioner | Oil | AC | | Oil | | x | x | x |

WIRING TABLE

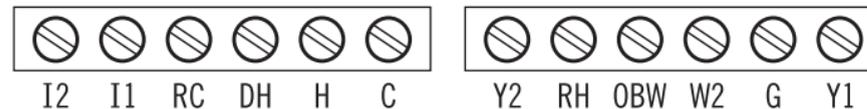


| CONFIGURATION | Y1 | Y2 | W2 | OB/W | R/C | R/H | G |
|---------------|----|----|----|------|-----|-----|---|
|---------------|----|----|----|------|-----|-----|---|

1 Stage Cooling, 2 Stage Heating

| | | | | | | | | |
|-----------------|------------------|----|----------------|----------|----------|---|---|---|
| Air Conditioner | 2 Stage Gas | AC | | Gas1 | Gas2 | x | x | x |
| Air Conditioner | Electrical Furn. | AC | | El.Furn1 | El.Furn2 | x | x | x |
| Air Conditioner | Emg. El. Furn. | AC | Emg. El. Furn. | El.Furn1 | El.Furn2 | x | x | x |
| Air Conditioner | Gas | AC | | Gas1 | Gas2 | x | x | x |
| Air Conditioner | Oil | AC | | Oil1 | Oil2 | x | x | x |
| Heat Pump | Electrical Furn. | HP | | El.Furn | OB | x | x | x |
| Heat Pump | Gas | HP | | Gas | OB | x | x | x |
| Heat Pump | Oil | HP | | Oil | OB | x | x | x |

WIRING LEGEND

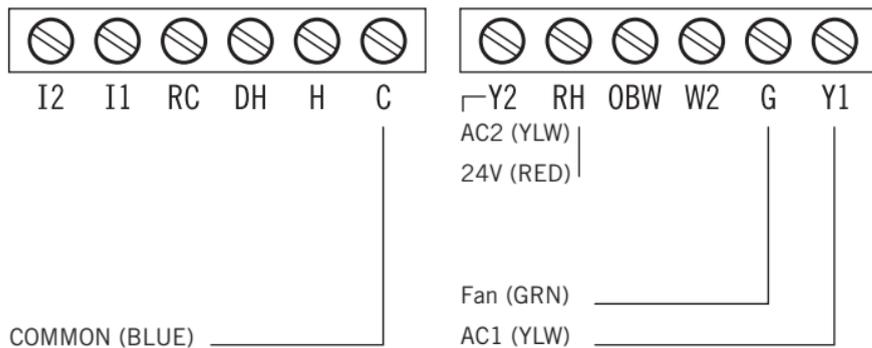
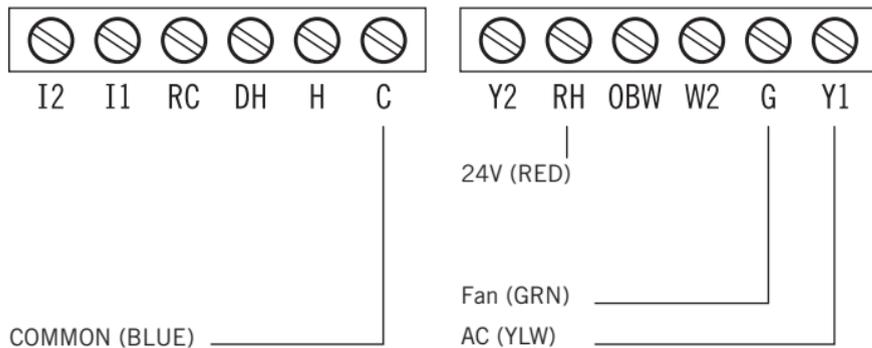


| TERMINAL | EQUIPMENT | STANDARD COLOR |
|----------|-----------|----------------|
|----------|-----------|----------------|

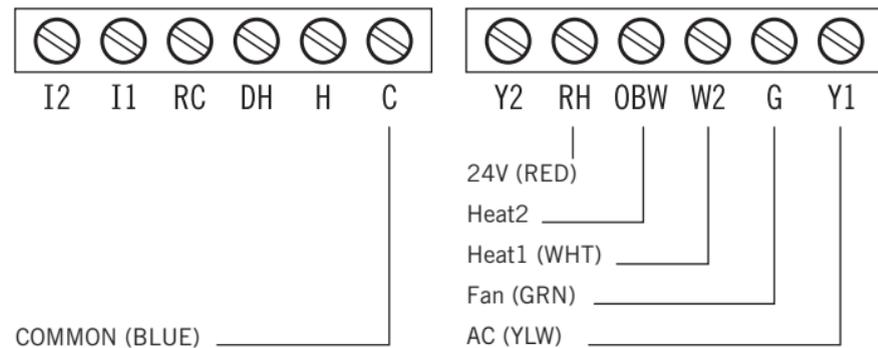
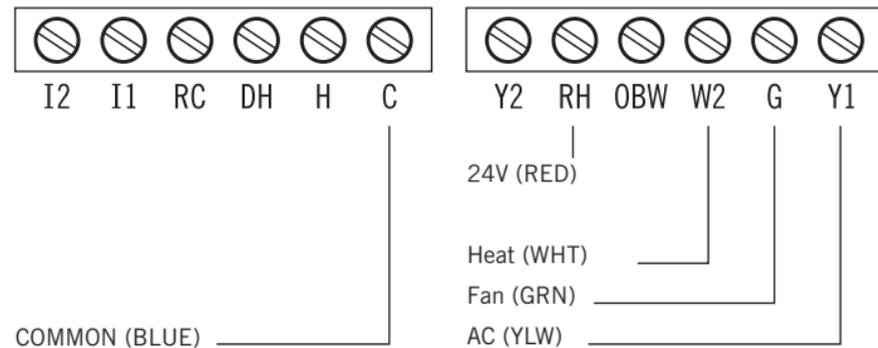
| | | |
|---------|--|---------|
| Y1 | First Heat Pump & AC | Yellow |
| G | Fan | Green |
| W2 | First Stage Furnace | White |
| OBW | Reverse Valve - Second Stage Furnace | Orange |
| RH | 24v | Red |
| Y2 | Second Heat Pump & AC | Unknown |
| C | Common | Blue |
| H | Humidity Control | Unknown |
| DH | Dehumidity Control, Variable Fan Control | Unknown |
| RC | 24v | Unknown |
| 11 & 12 | Not Used | |

NOTE: The above colors are standard in HVAC industry. The wiring should be confirmed before installation

WIRING DIAGRAM



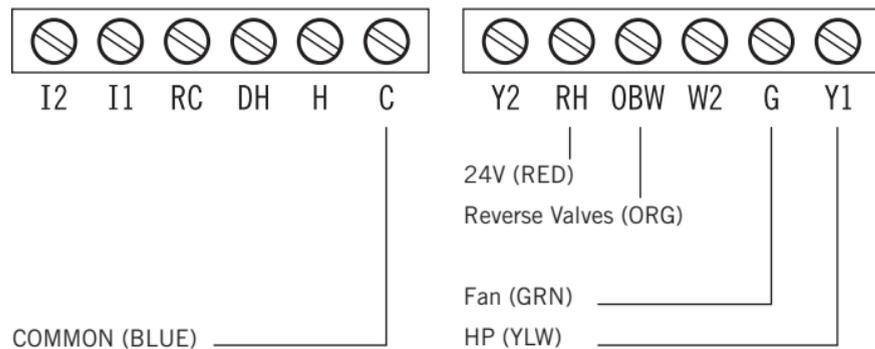
WIRING DIAGRAM



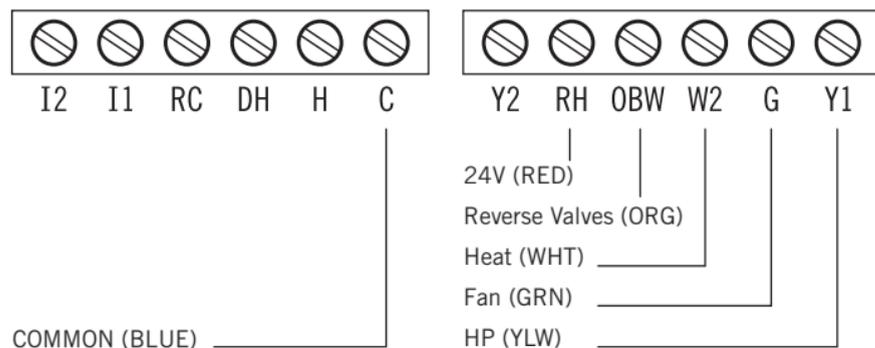
WIRING DIAGRAM



ONE HEAT PUMP



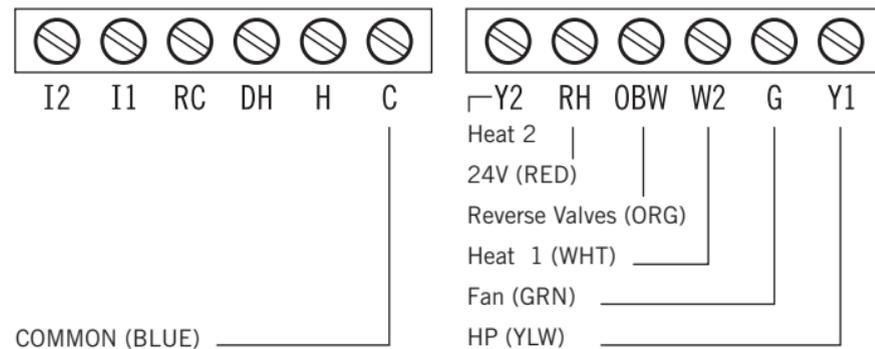
ONE HEAT PUMP & ONE HEAT



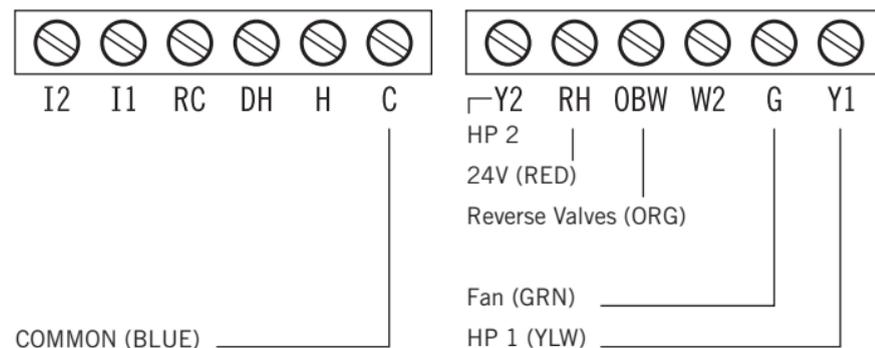
WIRING DIAGRAM



ONE HEAT PUMP & TWO HEAT



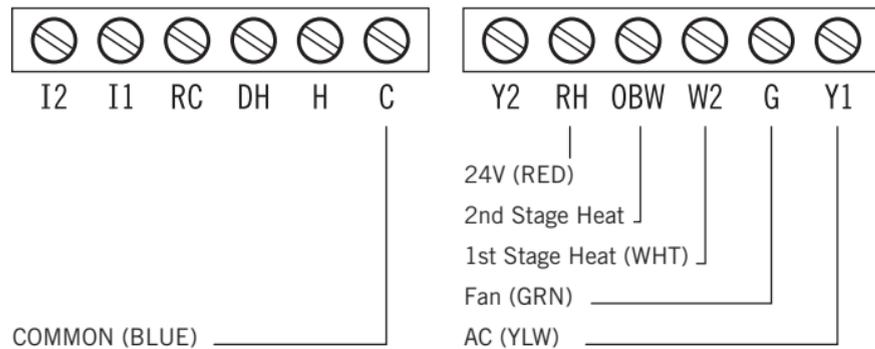
TWO HEAT PUMP



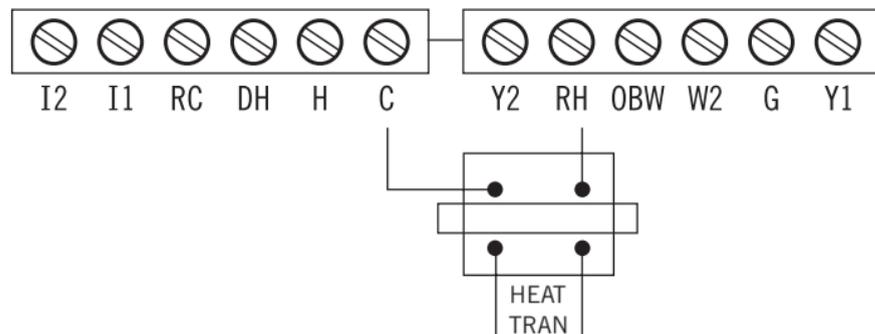
WIRING DIAGRAM



AC & TWO STAGE FURNACE



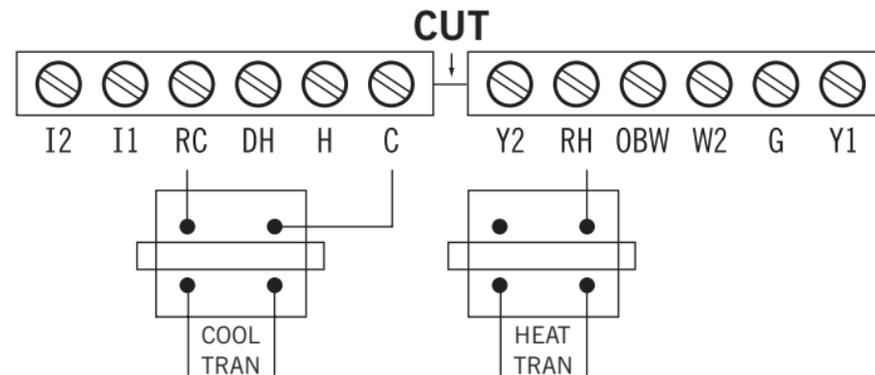
ONE TRANSFORMER



WIRING DIAGRAM



TWO TRANSFORMERS



HOME PAGE



TO RETURN TO THE HOME PAGE,
SIMPLY TOUCH  ICON
AT ANY TIME!



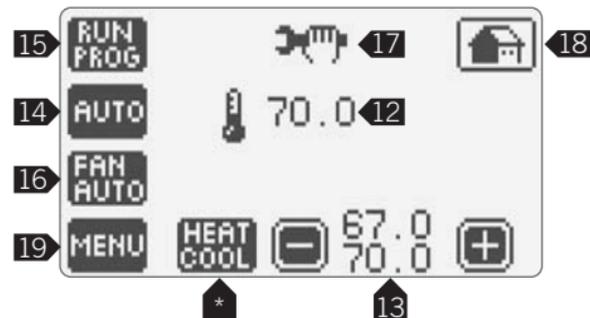
- 1 Room Temperature; to change °F/°C, go to 30.
- 2 Thermostat Control Mode; to change, go to 15.
- 3 Temperature Control Mode; to change, go to 14.
- 4 Fan Operation Mode; to change, go to 16.
- 5 Fan Operation Indicator; to change, go to 16.
- 6 Vacation Mode Indicator; to change, go to 24.

- 7 Security On Indicator; to change, go to 31.
- 8 Heating set point; to change, go to 13.
- 9 Cooling set point; to change, go to 13.
- 10 Date (Month/Day/Year); to change, go to 20.
- 11 Time; to change, go to 20.

CONTROL PAGE



TO ACCESS THE CONTROL PAGE,
SIMPLY TOUCH THE HOME PAGE
SCREEN... ANYWHERE!



- 12 Current Room Temperature.
- 13 Heat and Cool temperature set points; to change, raise or lower set point as desired. In "Auto" mode touch  Heat/Cool button (Heat or Cool will flash once selected), then raise or lower set points as desired.
- 14 Temperature Control Mode; select between Heat / Cool / Auto / Emergency Heat.
- 15 Thermostat Operation Mode: Select between "Run Program" mode (for details, see 21) or "Hold Temperature" mode.

- 16 Fan Operation Mode: select between Fan Automatic where the fan will turn on only when there is a demand for heating or cooling. Fan Continuously On – the fan runs continuously/ Fan Intermittent. *In the fan intermittent mode the fan will run for 10 minutes per hour which is a convenient way to filter the air and conserve energy.*
- 17 Displays Installer Message; to enter a message, go to 33.
- 18 Return to Home Page.
- 19 Access the Menu Page.

MENU PAGE



TO ACCESS THE MENU PAGE,
SIMPLY TOUCH **MENU**
FROM THE CONTROL PAGE.



20 Set Date and Time.

21 Program temperature and fan events by:

- Select the Day of the week.
- Select the Event number
- Select the Start time of the Event
- Select the desired temperature setpoint
- Select the next Event number and repeat steps 3 and 4.
- 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.

- The thermostat will then prompt you to copy the settings. To activate the program select run program from the control page.

22 Displays system energy consumption and cost: to enter system consumption parameters, go to **29**; otherwise, displays fan and compressor runtime.

MENU PAGE



TO ACCESS THE MENU PAGE,
SIMPLY TOUCH **MENU**
FROM THE CONTROL PAGE.



23 This function allows you to wipe and clean the screen with a dampened cloth with out accidentally changing any of the settings; it place the thermostat screen in a sleep mode for 15 seconds.

24 Vacation settings allows you to set the temperature to a fixed setpoint during the time you are on vacation. Please note that either Heat or Cool must be selected from the control page before entering the Vacation Settings page. To active the feature 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 main page. When you return from vacation, you will see a message Vacation Mode Ended displayed on the screen, simply touch the screen to acknowledge the message.

MENU PAGE



TO ACCESS THE MENU PAGE,
SIMPLY TOUCH **MENU**
FROM THE CONTROL PAGE.



25 Displays filter usage in days and resets filter timer.

26 Set Screen Options:

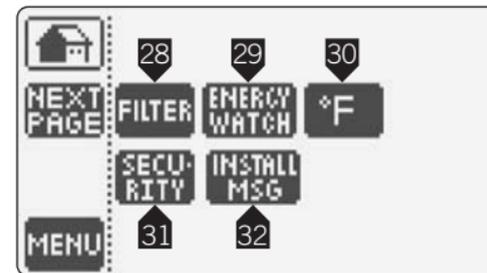
- Daylight Time (ON/OFF): activate only if you are located in a “Daylight Savings Time” zone.
- Reverse: Select between dark background (ON) or light background (OFF)
- Night Reverse: Select between ON: Automatically reverses screen background for comfortable viewing at night (from 9PM to 6AM) OFF: screen background determined by “Reverse” function setting.

• Contrast: set screen contrast from 1-11.

27 To access “Advanced Settings”, hold finger 5 seconds on icon. A warning will appear:

Caution: Incorrect configuration can damage your system, continue? YES NO

ADVANCED SETTINGS PAGE 1



28 Turn “Filter Monitor” ON or OFF; if ON enter the filter replacement interval.

29 Enter HVAC system consumption parameters rounded off to kW; see **26** (Typically: Fan 1kW; Heat Pump 1kW/ton; Furnace 5-30 kW, 7-9¢/kW)

30 Change thermostat temperature display units (°F or °C).

31 Turn “Security” ON or OFF (Default Security PIN = 1111) and select the security level: The security settings allow you to protect your thermostat thermostat from unauthorized use.

- Turn Security On or Off (Default pin 1111)

• You will be prompted to: (first time user) Enter the default PIN

• Enter your new PIN Re-enter your new PIN

• There are two modes of password protection: Full Lock and Partial Lock

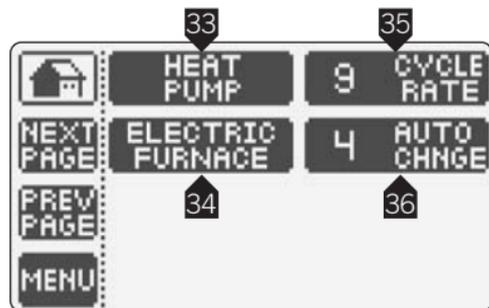
• The full lock Function does not allow any changes unless the user enters the PIN

• Partial Lock allows you to change only the temperature setpoint without entering a PIN.

32 Enter “Installer Message” (up to 42 characters) to appear at programmable intervals, see **17**.



PLEASE NOTE THAT INADVERTENTLY MODIFYING COMPRESSOR AND FURNACE SETTINGS, MAY SERIOUSLY DEGRADE SYSTEM PERFORMANCE.

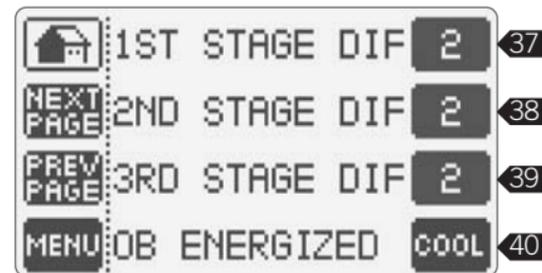


33 Select system heating and/or cooling equipment: Heat Pump, 2-stage Heat Pump, Air Conditioning, No Compressor – see Wiring Diagram.

34 Select the system Furnace Type: 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; see Wiring Diagram.

35 Set maximum compressor cycles per hour.

36 Set Minimum difference between auto mode heat and cool temperature set points. See 14.



37 Set temperature difference between temperature set point and actual temperature reading before 1st stage heating or cooling is initiated.

38 Set temperature difference between 1st stage initiation (37) and 2nd stage heating or cooling initiation.

39 Set temperature difference between 2nd stage initiation (38) and 3rd stage heating or cooling initiation.

NOTE: Number of stages depends on your system; see 33 & 34.

40 Reverses the Heat Pump OB Valve contact; (manufacturer dependant)



41 Specify X 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 function avoids excess compressor wear in the case where the necessary temperature set point is not met (see [37](#), [38](#) & [39](#)). Set to "00" to disable.



42 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).

SIMPLE THERMOSTAT MODE



THERMOSTAT CAN ALSO FUNCTION AS A NON-PROGRAMMABLE THERMOSTAT AFTER IT HAS BEEN CONFIGURED.

Simple Mode has the following basic features:

Temperature Control Modes:



Fan Operation Modes:



To enable "Simple Mode", press the reset button (take off the thermostat faceplate and press the reset button located in the bottom right-hand corner). The message "Touch for Simple Thermostat" will appear. Touch the screen, and the thermostat 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 Thermostat, simply press the reset button and touch the screen when the message "Touch for Programmable Thermostat" appears.***

TROUBLESHOOTING



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.

PARTIAL LOCK and FULL LOCK do not function.

You must not touch the screen for 1 minute for the thermostat 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.

Air conditioning turns on in HEAT mode and heating turns on in COOL mode.

Reverse the OB valve (see "Advanced Settings" Page 3).

Thermostat appears normal until the screen becomes blank when the compressor or heating system turn on.

You need to connect the "C" wire. 4 wire system will not function unless the heat and compressor contactors can supply enough current to power the thermostat with only 4 wires, if you cannot hook up the "C" wire another possible solution is to connect two 250 ohm 10 watt resistors in the HVAC room, one between Y and C, and the second one between W2 and C.

IMPORTANT NOTICE



When using this thermostat with a gas furnace a common wire (C) must be connected.

When working without a common wire:

A confirm in heat mode the cooling does not switch on or **B** confirm in cooling mode the heat does not switch on

If test **A** or **B** fail or the thermostat shuts down in either heat or cool mode then it is necessary to connect a common wire, (C), alternatively it may be possible to solve this issue by simply connecting the 250 ohm 10 watt resistor between C and W (in the case of a cooling problem – see B) or between C and Y1 (in the case of a heating problem - see A) at the HVAC equipment.

When working without a common wire, **A** confirm that when there is a call for heat, cooling does not also activate, and when there is a call for cool, heating does not also activate.

If using the configuration of **Heat Pump and Furnace with no Common Wire** confirm that when Heat Pump and Furnace are working together (both stages are operating at the same time) that the display does not go blank, if so you must use a Common Wire.

This thermostat is equipped to run with two separated power transformers if required RC and RH. Terminals RC and RH are internally connected together however you should wish to use two transformers simply cut with a blade the copper trace on the printed circuit board located between the C and Y2 screw terminals.

LIMITED WARRANTY



Hardware

Fast Parts Division - International Comfort Products, LLC warrants the original end user ("Customer") that new FAST HVACR Parts thermostat branded products will be free from defects in workmanship and materials, under normal use, for two (2) years from the original purchase date.

Software

Fast Parts Division - International Comfort Products, LLC warrants to Customer that the thermostat software will perform in substantial conformance to its program specifications for a period of two (2) 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 Fast Parts Division - International Comfort Products, LLC, Customer's sole and exclusive remedy will be, at Fast Parts Division - International Comfort Products, LLC'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. Fast Parts Division - International Comfort Products, LLC 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 Fast Parts Division - International Comfort Products, LLC product dealer or installer within the applicable warranty period to obtain warranty service. Dated proof of original purchase will be required. Fast Parts Division - International Comfort Products, LLC will not be responsible for Customer's memory data contained in, stored on, or integrated with any products returned to Fast Parts Division - International Comfort Products, LLC for repair, whether under warranty or not.

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 FAST PARTS DIVISION - INTERNATIONAL COMFORT PRODUCTS, LLC AND ITS SUPPLIERS.

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FAST PARTS DIVISION - INTERNATIONAL COMFORT PRODUCTS, LLC

Technical Support: 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)

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 PATENT
6,786,421
OTHER PATENTS
PENDING

