Braeburn®

MODEL
3200

Premier Series
Non-Programmable
2 Heat / 2 Cool Heat Pump
Digital Thermostat

USER MANUAL

Compatible with low voltage multi-stage heat pump systems with up to two stages of heating and two stages of cooling. Not for use on single-stage heating or cooling systems.

READ ALL INSTRUCTIONS BEFORE PROCEEDING

WARNING!

Important Safety Information

- Always turn off power to the air conditioning or heating system prior to installing, removing, cleaning or servicing thermostat.
- Read manual thoroughly prior to installing, programming or operating thermostat.
- This thermostat is designed for use with a 24 Volt-AC low voltage multi-stage heat pump system.
- Do not use this thermostat on single stage systems or other systems with voltages higher than 30 Volt-AC.
- This thermostat requires 24 Volt AC power for normal operation and control of the heating or cooling system.
- Wiring must conform to all building codes and ordinances as required by local and national code authorities having jurisdiction.
- Do not short (or jumper) across terminals on the gas valve or at the heating or cooling system control board to test the thermostat installation. This could damage the thermostat and void the warranty.
- Do not select COOL mode of operation if the outside temperature is below 50˚ F (10˚ C). This could damage the controlled cooling system and cause personal injury.
- This thermostat should only be used as described in this manual. Any other use is not recommended and will void the warranty.

CONTENTS

1 SPECIFICATIONS

- Electrical Rating: 24 Volt AC (18-30 Volt AC)
  2 amp maximum load per terminal
  4 amp total maximum load (all terminals)
- Control Range: 45˚ - 90˚ F (7˚ - 32˚ C)
- Accuracy: +/- 1˚ F (+/- .5˚ C)
- AC Power: 18-30 Volt AC
- Compatibility: Multi-stage heat pump systems with up to two stages of heating and two stages of cooling.
- Terminations: R, Y1, Y2, W2, E, G, O, B, L, C

2 INSTALLATION

2.1 Replacing Existing Thermostat

1. Always turn off power to the air conditioning or heating system prior to removing existing thermostat.

2. Remove the cover of your old thermostat and locate the wire terminals. Do not remove wires from terminals yet.

3. Using small pieces of masking tape label wires prior to removal from terminals. Use the chart below to determine the new terminal designations for your new thermostat.

Old Terminal from Existing Thermostat	New Terminal for New Thermostat	Terminal Description
R, V-VR or VR-R	R	24 Volt AC
Y, Y1 or M	Y1	Stage 1 Cooling or Heating
Y2	Y2	Stage 2 Cooling
W1, W2 or W-U	W2	Stage 2 Heating
E	E	Emergency Heating
G or F	G	Fan Control
O or R	O	Reversing Valve (Cooling)
B	B	Reversing Valve (Heating)
L or X	L	System Status LED
C, X or B	C	24 Volt AC, Transformer Common

4. After labeling and removing all wires from terminals, unscrew the existing thermostat sub-base from wall. Make sure to secure wires to prevent them from slipping back into the hole in the wall.

 Pub. No. 3200-100-006

2 INSTALLATION *cont.*

2.1 Replacing Existing Thermostat *cont.*

NOTE: *This thermostat is for use on low voltage 24 Volt AC multi-stage heat pump systems with up to two stages of heating and two stages of cooling and requires a transformer common wire for proper installation. This thermostat is not for use on single stage heating or cooling systems.*

2.2 Installing Your New Thermostat

NOTE: *If you are installing this thermostat in a new installation be sure to locate the thermostat 4 to 5 feet above the floor in accordance with applicable building codes. Make sure to install the thermostat in a location that provides good airflow characteristics and avoid areas behind doors, near corners, air vents, direct sunlight or near any heat generating device. Installation in any of these areas could impact thermostat performance.*

1. Always turn off power to the air conditioning or heating system prior to installing thermostat.
2. Place system switch on front of thermostat to **OFF** position.
3. Place fan control switch on front of thermostat to **AUTO** position.
4. Remove front of thermostat from sub-base by pressing release latch on bottom of thermostat.
5. Place the thermostat sub-base against wall in the desired thermostat location.
6. Guide thermostat wires through center hole in sub-base. Continue to hold against wall.
7. Mark placement of mounting holes and drill using a 3/16" drill bit. Gently tap supplied plastic anchors into the holes in the wall.
8. Place the sub-base against the wall in the desired location, making sure the mounting holes are aligned and the thermostat wires are properly inserting through opening in sub-base.
9. Fasten the sub-base to wall using supplied screws.
10. Connect wires to quick wiring terminal block as appropriate using the new terminal designations. Refer to *Wiring Diagram* section of this manual if required for assistance.
11. Make sure all of the wire connections are secure and are not touching any other terminal to prevent electrical shorts and potential damage to the thermostat.
12. Turn the front thermostat body over, exposing the rear view of the circuit board.
13. Locate the internal **°F / °C** switch on the circuit board.
14. Using your finger, gently flip the switch toward the preferred temperature **°F / °C** scale.
15. Locate the auxiliary heat option switch, **AE-AG,** on the circuit board. For electric auxiliary heat units the switch should be set to the **AE** position. For units with gas or oil auxiliary heat, move the switch to the **AG** position. This will lock out the compressor stage 1 minute after a second stage heat call for maximum efficiency.
16. Attach front body of thermostat to sub-base, being careful to align the terminal pins on the front body with the terminal block on the sub-base.
17. Restore system power so you can test installation.

3 TESTING YOUR NEW THERMOSTAT

WARNING! *Read BEFORE Testing*

- Do not short (or jumper) across terminals on the gas valve or at the heating or cooling system control board to test the thermostat installation. This could damage the thermostat and void the warranty.
- Do not select COOL mode of operation if the outside temperature is below 50° F (10° C). This could possibly damage the controlled cooling system and may cause personal injury.
- This thermostat includes an automatic compressor protection feature to avoid potential damage to the heat pump system from short cycling. This thermostat automatically provides a 5-minute delay after turning off the heating or cooling heat pump output to protect the compressor.

NOTE: *Test your thermostat prior to programming any user settings. Pressing the **RESET** button will erase any user entries previously programmed. This will erase all user settings and return them to their default values.*

1. Place the system switch in the **HEAT** position.
2. Press the ∧ button on the keypad until the set point temperature setting is a minimum of 3 degrees higher than the current room temperature. The heating system should start within several seconds. The fan may not turn on immediately due to the heating system built-in fan delay.
3. Place the system switch in the **OFF** position. The heating system should stop within several seconds.
4. Wait 5 minutes for the automatic compressor short cycle protection period to expire, or press the **RESET** button to bypass this feature for initial testing purposes. Pressing the **RESET** button will erase any user entries previously programmed.
5. Place the system switch in the **COOL** position.
6. Press the ∨ button on the keypad until the set point temperature is a minimum of 3 degrees lower than the current room temperature.
7. The cooling system should start within several seconds. Place the system switch in the **OFF** position. The cooling system should stop within 90 seconds (dependent on the setting of the Residual Cooling Fan Feature).
8. Place the fan switch in the **ON** position. The system blower should start.
9. Place the fan switch in the **AUTO** position. The system blower should stop.

4 PROGRAMMING USER SETTINGS

4.1 Default Thermostat Settings

Function	Status After Reset
Operation Mode	Normal Operating Mode
Room Temperature	70° F (21.0° C), to be renewed within 5 seconds
Set point Temperature	According to system switch: 62° F (17.0° C) for Heat or Off 85° F (29.0° C) for Cool
Temperature Scale	°F or °C dependent on switch setting
Low Battery Warning	Off, to be renewed within 5 seconds
First Stage Differential	.5° F (0.25° C)
Second Stage Differential	2.0° F (1.0° C)
Short Cycle Protection Timer	Reset
Output Relays	Off
Residual Cooling Fan Delay	60 Seconds
Recirculating Fan Timer	Reset with 120 Min. Off Cycle
Keypad Lock	Unlocked

4 PROGRAMMING USER SETTINGS *cont.*

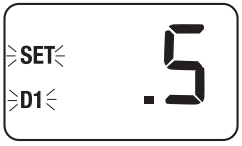
4.2 Setting Temperature Differentials

The default settings for the first and second stage differentials and residual cooling fan delay settings are compatible with most systems and applications. This is normally set at time of installation and usually does not require any modification under normal operating conditions. If you feel that the first or second stage of your system is turning on too often, or you wish to change the fan delay settings, simply follow the instructions below.

NOTE: *The first and second stage differential settings are the same for both the heating and cooling systems.*

Setting First Stage Differential

The default setting is .5˚ F (0.25˚ C). The room temperature must change .5˚ F (0.25˚ C) from the set point temperature before the thermostat will initiate the system in heating or cooling.

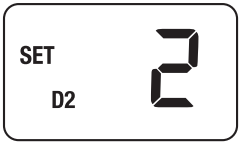


1. In normal operating mode, press and hold the ∧ and ∨ buttons at the same time for 4 seconds. LCD display will show "**SET D1 X**˚", where "**X**" equals the ˚F / ˚C differential setting. This is the current first stage differential setting.
2. Press the ∧ or ∨ button to set the first stage differential to your desired setting of .5˚, 1˚, or 2˚ F (0.25˚, .5˚, or 1˚ C).

NOTE: *If you do not desire to change the second stage differential setting, you can press the ∧ and ∨ buttons at the same time twice to proceed to the Residual Cooling Fan setting–see step 4.3.*

Setting Second Stage Differential

The default setting is 2˚ F (1.0˚ C). This means that the room temperature must change 2˚ F (1.0˚ C) in addition to the first stage differential setting before the thermostat will initiate the second stage of the system in heating or cooling.



3. Press the ∧ and ∨ button at the same time again and the LCD display will show "**SET D2 X**˚", where "**X**" equals the ˚F / ˚C differential setting. This is the current second stage differential setting.
4. Press the ∧ or ∨ button to set the second stage differential to your desired setting of 2˚, 3˚, 4˚, 5˚, or 6˚ F (1.0˚, 1.5˚, 2.0˚, 2.5˚, or 3.0˚ C).

4.3 Setting Residual Cooling Fan Feature

The default setting is 60 seconds. During the **COOL** mode of normal operation the fan will stay on for 60 seconds after the cooling system has satisfied the set point temperature and has turned off the compressor. This allows the system to provide higher efficiency during cooling operation.

1. Press the ∧ and ∨ buttons at the same time again and the LCD display will show "**SET FAN XX**", where "**XX**" equals the fan delay time in seconds during the cooling mode of operation.
2. Press the ∧ or ∨ button to set the residual cooling fan delay to your desired setting of 0 (disabled), 30, 60, or 90 seconds.
3. Press the ∧ and ∨ buttons at the same time again to set the Recirculating Fan off cycle or wait 5 seconds and the thermostat will automatically return to normal operating mode.

4 PROGRAMMING USER SETTINGS *cont.*

4.4 Setting the Recirculating Fan Cycle *(Also see section 5.3)*

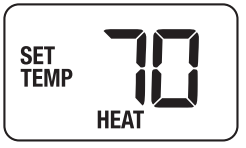
The default is 120 minutes.

1. The display will show "**SET OC XXX**", where XXX is the maximum interval of time (in minutes) that the fan will remain off if the Recirculating Fan Mode is selected.
2. Press the ∧ or ∨ button to change the Recirculating Fan off cycle (120, 60, or 40 minutes).
3. Press both the ∧ and ∨ buttons at the same time again to return to the normal operating mode, or wait 5 seconds for the thermostat to return to the normal mode automatically.

NOTE: *To erase all user program settings, gently press the **RESET** button using a paper clip or a small pencil tip. This will return all thermostat settings to their default values, and erase all user program settings entered by the user.*

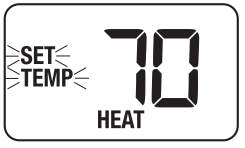
5 ADDITIONAL OPERATION FEATURES

5.1 Review Set Temperature

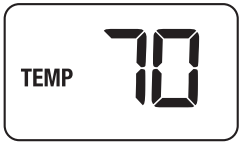


1. Press and hold the ∧ or ∨ button. The current set point temperature will be displayed in the place of the current room temperature, and the indicator **SET TEMP** will be displayed.
2. The display will return to normal operating mode when the ∧ or ∨ button is released. Continuing to hold the ∧ or ∨ button for 3 seconds or longer will allow the user to change the current set point temperature (See *Changing Set Temperature*).

5.2 Changing Set Temperature



1. Press and hold ∧ or ∨ button for 3 seconds. The entire display will flash once and the **SET TEMP** indicator will be flashing. Release the ∧ or ∨ button and press the ∧ or ∨ button again as desired to adjust the set temperature.
2. The display will return to normal operating mode after 5 seconds.



3. The **TEMP** indicator will be showing in the display indicating that the current temperature shown in the display is the room temperature.

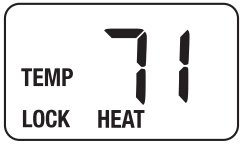
5 ADDITIONAL OPERATION FEATURES *cont.*

5.3 Recirculating Fan Mode *(see section 4.4)*

The Recirculating Fan Mode provides more even temperature distribution and improves indoor air quality by circulation air through the furnace filtration system more often. The Recirculating Fan Mode can be selected by moving the fan switch to the recirculate position ®. If no call for heating or cooling occurs within the fan off cycle set in section 4.4, the fan will run for 12 minutes. The highest setting, 120 minutes (factory default), will run the fan least often–10% minimum run time. The lowest setting, 40 minutes, will run the fan most often–30% minimum run time. During any call for heating or cooling, fan control operates in the AUTO mode. The Recirculating Fan feature is available in the HEAT, OFF, or COOL mode.

5.4 Keypad Lockout

To prevent accidental or undesired adjustment of the thermostat set point, the Keypad Lockout feature disables the operation of the temperature setting keys, but not the backlight key. In order to enable the keypad lock, press and hold either the ∧ or ∨ button together with the backlight button for 5 seconds. The LOCK icon in the display will flash once per second, then appear continuously in the display. The keypad is now locked.



To unlock the keypad, press and hold either the ∧ or ∨ button together with the backlight key for 1 second. The LOCK icon will disappear from the display, and the keypad is now unlocked.

5.5 Auxiliary Heat Fossil Fuel Switch

The Model 3200 is equipped with an auxiliary heat option switch which is set at installation for either an electric or fossil fuel (gas, oil or propane) auxiliary heat source. For heat pump units with an electric auxiliary stage, both the first and second stages of heating will run when a call for second stage heat is made. For heat pump units with a fossil fuel auxiliary stage, the first stage will be locked out one minute after a second stage heat call, and the second stage alone will be used to recover to the set point, improving the efficiency of your heat pump unit.

5.6 Compressor Protection

This thermostat includes an automatic compressor protection feature to avoid potential damage to the heat pump system from short cycling. This thermostat automatically provides a 5-minute delay after turning off the heating or cooling heat pump output to protect the compressor.

NOTE: *The installer can reset the thermostat and bypass the compressor protection features by pressing the **RESET** button. This will erase all user program settings and should only be used during installation for testing purposes or to reset a thermostat to regain normal operation. This will return all thermostat settings to their default values. The user will have to re-program all of the erased settings.*

5 ADDITIONAL OPERATION FEATURES *cont.*

5.7 Resetting Thermostat

The Reset feature allows the user to completely reset the thermostat. To erase all entered program settings, gently press the **RESET** button using a paper clip or a small pencil tip. This will return all thermostat settings to their default values and register all new manual switch settings.

5.8 Multi-Colored LED Status Indicators

The three multi-colored LED status indicators located on the front of your thermostat above the display will notify you of key system information.

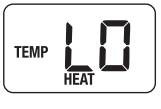
AUX (Green): This will turn on when the auxiliary second stage of heating is active. The auxiliary stage of heating is usually the least economical stage of heat.

CHECK (Red): Indicator will activate when a malfunction occurs in the heat pump system. When this light is active, call a professional service technician to verify system performance and switch the system to Emergency Heat Mode if required to maintain room temperature.

EMER (Red): This indicator will light when you select Emergency Heat Mode of operation using the system selector switch. When you select Emergency Heat Mode, the heat pump stage of heat is turned off and the emergency (auxiliary) stage of heating is used to maintain the set point temperature.

6 TROUBLESHOOTING

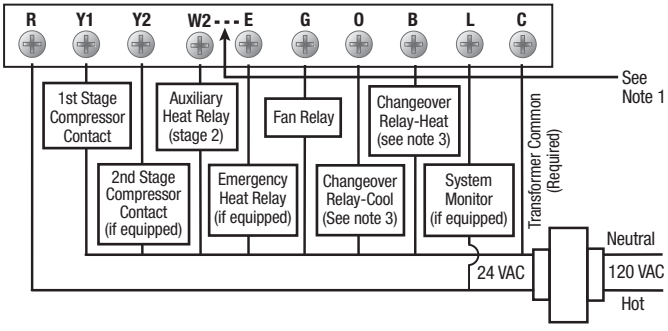
SYMPTOM	POTENTIAL SOLUTION
Thermostat does not turn on heating or cooling system.	Check to see if **OFF** is shown in display. This indicates that the system is turned off at the thermostat. Move the system selector switch to the **HEAT** or **COOL** position. After the compressor short cycle protection 5-minute period expires, the system should start within a minute. Compressor protection features may be in effect due to compressor short cycle conditions. See *Compressor Protection* section for full explanation of this feature. Heat Pump may be malfunctioning. Review the **CHECK** status indicator light to see if it is lit. If the **CHECK** status indicator light is lit, call a professional service technician to confirm heat pump operation and provide necessary service. If heating is required you can slide the system switch to **EMER** setting which will start the Emergency Heat source to provide heating until the heat pump can be serviced.
Thermostat turns on heating instead of cooling or cooling instead of heating.	Check thermostat wiring to make sure that the heating and cooling stages are connected to the correct terminals on the wiring terminal block. See *Installation* and *Wiring Diagram* sections of this manual.
Thermostat turns heating or cooling system on too often or not often enough.	Increase or decrease first stage temperature differential setting as appropriate to provide the desired performance level. See *Setting Temperature Differential* and *Residual Cooling Fan Feature* section of this manual.

SYMPTOM	POTENTIAL SOLUTION
Thermostat turns on second (auxiliary) stage of heating or cooling too quickly or not quickly enough.	Increase or decrease second (auxiliary) stage temperature differential setting as appropriate to provide the desired performance level. See *Setting Temperature Differential* and *Residual Cooling Fan Feature* section of this manual.
OFF is shown in thermostat display and heating or cooling system will not start. 	This indicates that the system is turned off at the thermostat. Move the system selector switch to the **HEAT** or **COOL** position. After the compressor short cycle protection 5-minute period expires the system should start within several seconds.
Thermostat display is blank.	It is possible that AC power is not present at the thermostat. Check fuse, circuit breaker and thermostat wiring as appropriate to verify AC power is available. If AC Power is present, call a professional service technician immediately to verify thermostat and system performance.
HI is shown in the thermostat display where the room temperature is normally displayed. 	The temperature sensed by the thermostat is higher than the 90˚ F (32˚ C) upper limit of the thermostats display range. The display will return to normal after the sensed temperature lowers within the 45˚ to 90˚ F (7˚ to 32˚ C) display range. Turn on the cooling system or use other methods to lower the temperature accordingly. This condition could occur from the system being turned off during an exceptionally warm period or upon installation when the thermostat has been stored for a long period of time in a warm vehicle or location prior to being installed. The thermostat is equipped with a mechanical high temperature safety switch that will turn off the thermostat should the temperature exceed 99˚ F (37˚ C).
LO is shown in the thermostat display where the room temperature is normally displayed. 	The temperature sensed by the thermostat is lower than the 45˚ F (7˚ C) lower limit of the thermostats display range. The display will return to normal after the sensed temperature rises within the 45˚ to 90˚ F (7˚ to 32˚ C) display range. If the temperature in the controlled space seems to be normal, wait for the thermostat to acclimate to the correct room temperature. If the room seems to be colder than usual, turn on the heating system to raise the temperature as needed for comfort within the room. This condition could occur from the system being turned off during a cold weather period or upon installation when the thermostat has been stored for a long period of time in a cold vehicle or location prior to being installed. The thermostat should be allowed to warm up prior to installation to allow proper heating control once installed.

SYMPTOM	POTENTIAL SOLUTION
Thermostat will not allow me to program a set point temperature higher than 90˚ F (32˚ C).	This is above the normal thermostat temperature setting range of 45˚ to 90˚ F (7˚ to 32˚ C).
Thermostat will not allow me to program a set point temperature lower than 45˚ F (7˚ C).	This is below the normal thermostat temperature setting range of 45˚ to 90˚ F (7˚ to 32˚ C).
Fan continues to run all the time whether the system is on or off.	Check that the fan control switch is in the **AUTO** position. This will allow the fan to run only when the heating or cooling system is turned on and running. Check thermostat wiring to make sure that the fan control wiring is connected to the correct terminals on the wiring terminal block. See *Installation* and *Wiring Diagram* sections of this manual.
Fan continues to run in cooling mode when the system has turned off.	The Residual Cooling Fan Control Feature can allow up to a 90 second fan delay after cooling system shutdown for energy efficiency gains. The default setting is 60 seconds. This can be changed to disable this feature or shorten the time period if desired. See *Setting Residual Cooling Fan Feature* section of this manual.
The room is too warm or too cold.	See *Review Set Temperature* section of this manual to verify the current set point and make any modifications that are necessary.
Thermostat will not allow me to change the set point.	Keypad is locked. press either the ∧ or ∨ key along with the backlight key to unlock.
Fan runs intermittently or when system is off.	Fan switch is in the Recirculate Mode ®.

7 WIRING DIAGRAM

Wiring Diagram for 2 Stage Heat, 2 Stage Cool Systems



NOTES: 1. User installed Jumper is required to use Auxiliary heat for both second stage and emergency heat on units without separate emergency heat and auxiliary heat terminals. DO NOT install jumper if both terminals are present.

2. Eliminate connection to Y2 for units with single stage cooling.

3. Make O or B connections as required by unit.

Store this booklet for future reference

Braeburn Systems LLC warrants each new Braeburn thermostat against any defects that are due to faulty material or workmanship for a period of five years after the original date of purchase by a professional service technician. This warranty and our liability does not apply to batteries, nor does it include damage to merchandise or the thermostat resulting from accident, alteration, neglect, misuse, improper installation or any other failure to follow Braeburn installation and operating instructions.

Braeburn Systems LLC agrees to repair or replace at its option any Braeburn thermostat under warranty provided it is returned postage prepaid to our warranty facility in a padded carton within the warranty period, with proof of the original date of purchase and a brief description of the malfunction. This limited warranty does not include the cost of removal or re-installation.

This warranty gives you specific legal rights and you may also have other rights that vary from state to state or province to province. Answers to any questions regarding our limited warranty may be obtained by writing our corporate offices.

WARRANTY FACILITY: Braeburn Systems LLC
Attn: Warranty Department
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Montgomery, IL 60538

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