Braeburn®

Installer Manual
Programmable Thermostats

ECONOMY SERIES

2030 1 Heat / 1 Cool Conventional or Heat Pump

2230 Up to 2 Heat / 1 Cool Conventional or Heat Pump

Model number is located on back of thermostat.

⚠ **Warning** ***For installation by experienced service technicians only.***

⚠ **Caution** ***Possible electric shock or damage to equipment can occur. Disconnect power before beginning installation.***

This thermostat requires 24 Volt AC Power or 2 properly installed "AA" Alkaline batteries for proper operation. When connecting 24 Volt AC Power, the batteries may be installed as a backup.

For use only as described in this manual. Any other use will void warranty.

This manual is for Installer use only - do not leave with end user.

1 SPECIFICATIONS

This thermostat is compatible with:
- Single stage conventional and heat pump systems
- Single stage heat pumps with auxiliary heat
- 250 – 750 millivolt heating only systems
- 2 wire hydronic zone systems

Electrical and Control Specifications
- Electrical Rating: 24 Volt AC
- 1 amp maximum load per terminal
- AC Power: 18 – 30 Volts AC
- DC Power: 3.0 Volt DC (2 "AA" Alkaline Batteries Included)
- Control Range: 45° to 90° F (7° to 32° C)
- Temperature Accuracy: +/- 1° F (+/- .5° C)

Terminations

2030: Rc, Rh, W1, Y1, G, O, B, C

2230: Rc, Rh, W1/E, W2, Y1, G, O, B, L, C

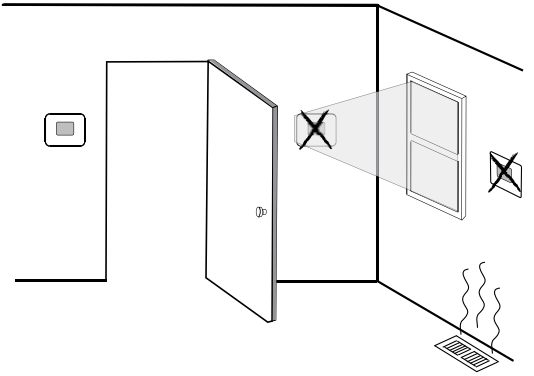
2 INSTALLATION

⚠ Warning ***Disconnect power before beginning installation.***

Thermostat Location

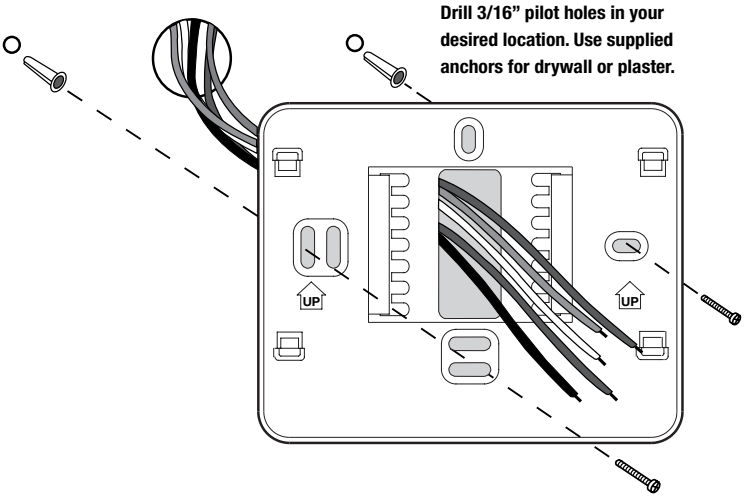
Install the thermostat approximately 5 feet (1.5m) above the floor in an area that has a good amount of air circulation and maintains an average room temperature.

Avoid installation in locations where the thermostat can be affected by drafts, dead air spots, hot or cold air ducts, sunlight, appliances, concealed pipes, chimneys and outside walls.



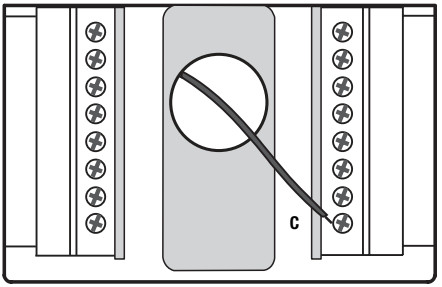
Install the Sub-Base:

- Remove the sub-base from the body of the thermostat.
- Mount the sub-base as shown below:

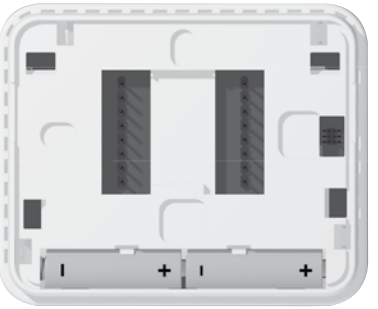


2 INSTALLATION

Provide Power



24VAC Power Terminal (C)



Batteries Installed as Shown

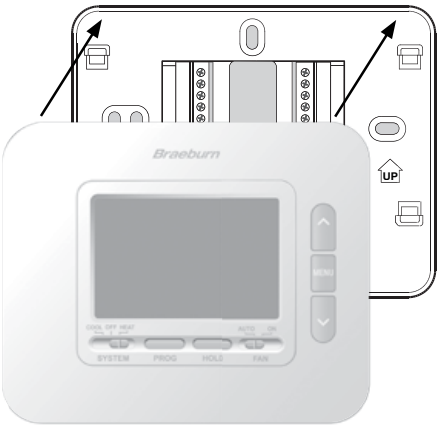
- **Battery Power** - Insert the 2 supplied "AA" type alkaline batteries into the battery compartment located in the rear housing of the thermostat. Make sure to position the Positive (+) and Negative (-) sides of the batteries correctly with the +/- symbols in the battery compartment.
- **Optional 24 Volt AC power** - Connect the common side of the transformer to the C terminal on the thermostat sub-base. In dual transformer installations, the transformer common must come from the cooling transformer.

Set Installer Switches

The Installer switches are located on the back of the thermostat and must be properly configured for this thermostat to operate properly.

Switch	Factory Default	Setting Options	Comments
CONV / HP	CONV	CONV	Select for conventional systems
		HP	Select for heat pump systems
HG / HE	HG	HG	Select for gas heat
		HE	Select for electric heat

Attach to Thermostat Sub-Base



Once you complete the wiring in Section 3, attach thermostat to sub-base and then configure the Installer Settings in Section 5.

1) Line up the thermostat body with the sub-base.
2) Carefully push the thermostat body against the sub-base until it snaps in place.

NOTE: This thermostat ships configured as a conventional (CONV) thermostat.

Conventional and Heat Pump Systems - *Typical Wiring Configurations*

NOTE: Make sure installer system selection switch is properly set to CONV or HP. See Section 2.

		CONVENTIONAL			HEAT PUMP	
		2030 / 2230		2230	2030 / 2230	2230
Wiring Terminal	**Terminal Description**	**Heat Only or Millivolt**	**1 Heat/ 1 Cool**	**2 Heat/ 1 Cool**	**1 Heat/ 1 Cool**	**2 Heat/1 Cool (w/Aux Heat)**
Rh	24 VAC Heating Transformer	Rh	Rh[1]	Rh[1]	Rh[6]	Rh[6]
Rc	24 VAC Cooling Transformer	-	Rc[1,2]	Rc[1,2]	-	-
W1/E	(W1) Conventional Heat Relay (E) Emergency Heat Relay	W1	W1	W1	-	E[7]
W2*	2nd Stage Heat/Auxiliary Heat	-	-	W2	-	W2[7]
Y1	Compressor Relay	-	Y1	Y1	Y1	Y1
G	Fan Relay	G[3]	G	G	G	G
O	Cool Active Reversing Valve	-	-	-	O[8]	O[8]
B	Heat Active Reversing Valve	-	-	-	B[8]	B[8]
L*	System Malfunction Indicator	-	-	-	L[9]	L[9]
C	24 VAC Transformer Common	C[4]	C[4,5]	C[4,5]	C[10]	C[10]

*2230 Only.

NOTES - Conventional Systems

1 Remove factory installed jumper wire for dual transformer systems
2 Only required for dual transformer systems
3 Only connect if needed for system
4 Optional 24 VAC transformer common connection
5 For dual transformer systems, common must come from cooling transformer

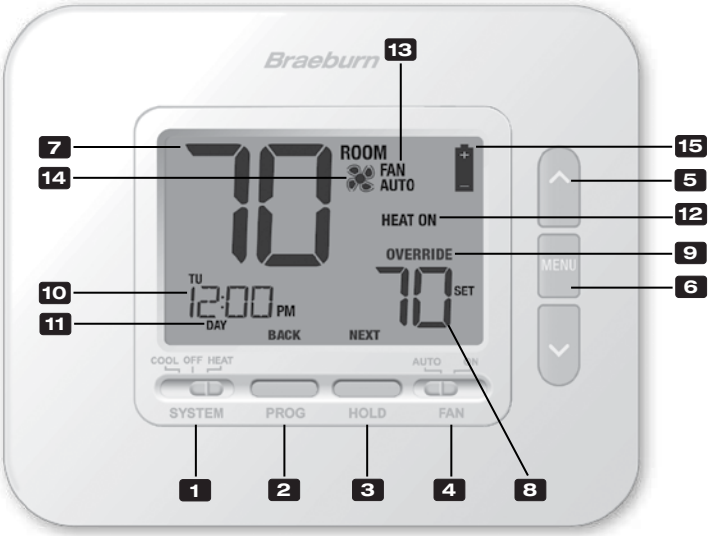
Provide disconnect and overload protection as required.

NOTES - Heat Pump Systems

6 Do not remove factory installed jumper wire
7 If no separate emergency heat relay, connect to W2 and Install a field supplied jumper wire from W2 to E
8 Wire O for cool active valve or B for heat active valve (never both)
9 If using optional L terminal, the 24 VAC common must be connected (C terminal)
10 Optional 24 VAC transformer common connection

Provide disconnect and overload protection as required.

4 QUICK REFERENCE



Thermostat and Display

1 **SYSTEM Switch**.....Selects the system you want to control

2 **PROG Button**.....Enters programming mode or hold for 3 seconds to enter SpeedSet® mode
BACK Button*.....Secondary function of the **PROG** button - Moves to previous setting

3 **HOLD Button**.....Enters / Exits the **HOLD** mode (program bypass mode)
NEXT Button* .....Secondary function of the **HOLD** button - Moves to next setting

4 **FAN Switch**.....Selects the system fan mode

5 **Up / Down Arrow Buttons**.....Increases or decreases settings (time, temperature, etc.)

6 **MENU Button**.....Used to access thermostat User / Installer setting modes

7 **Room Temperature** ..... Displays the current room temperature

8 **Set Temperature** ..... Displays the current setpoint temperature

9 **Override Indicator** ..... Indicates that the current program schedule has been temporarily overridden

10 **Time of Day** ..... Displays the current time of day

11 **Program Event Indicator** ..... Indicates which part of the program is currently active

12 **System Mode** ..... Displays the system mode and current system status

13 **Fan Mode Indicator** ..... Indicates the current system fan mode

14 **Fan Status Indicator** ..... Indicates that the system fan is running

15 **Low Battery Indicator** ..... Indicates when the batteries need to be replaced

Battery Compartment.....Located on the back side of thermostat (if installed)

*** BACK** and **NEXT** are secondary functions of the **PROG** and **HOLD** buttons. When in programming or configuration modes, **BACK** and **NEXT** appear in the display screen indicating that the **PROG** and **HOLD** buttons now function as **BACK** and **NEXT**.

5 INSTALLER SETTINGS

The Installer Settings must be properly configured in order for this thermostat to operate correctly. The Installer Settings are menu driven. The portion of these settings that do not apply to your setup will be skipped.

To Enter Installer Settings Menu

1. Press and hold down the **MENU** button for 5 seconds.
2. Release the **MENU** button after the first installer setting is displayed.
3. Change settings as required using the ∧ or ∨ buttons.
4. Press **NEXT** (HOLD) or **BACK** (PROG) to move to the next or previous setting.
5. Press **MENU** to exit. Menu will exit automatically after last setting.

If **0000 IL is displayed, you must enter your 4-digit installer lock code to proceed (see Installer Settings 11 and 12).*

No.	Installer Setting	Displayed	Default Setting	Available Settings	Description of Available Settings
1	**Programming Mode**	PROG	7	7	Select for 7-day programming mode
				52	Select for 5-2 day programming mode
				NO	Select for non-programmable mode
	Selects the programming capabilities of the thermostat, either full 7 individual days, 5-2 day (weekday/weekend) programming or non-programmable.				
2	**Temperature Scale**	DEG	F	F	Select for Fahrenheit temperature display
				C	Select for Celsius temperature display
	Selects a temperature scale of either °F or °C.				
3	**1st Stage Differential**	DIF1	0.5	0.5, 1.0, 2.0	Select a 1st stage temperature differential of 0.5°, 1° or 2° F (0.2°, 0.5° or 1.0° C)
	Selects a 1st stage temperature differential which controls the degree of separation between the setpoint temperature and the 1st stage of heating or cooling.				
4	**2nd Stage Differential**	DIF2	2.0	1.0, 2.0, 3.0 4.0, 5.0, 6.0	Select a 2nd stage temperature differential of 1°, 2°, 3°, 4°, 5° or 6° F (0.5°, 1.0°, 1.5°, 2.0°, 2.5° or 3.0° C)
	[2230 only] Selects a 2nd stage temperature differential which controls the degree of separation between the 1st and 2nd stage of heating or cooling.				
5	**Compressor Short Cycle Protection (CSCP)**	CSCP	5	5, 4, 3, 2, 1, 0	Select CSCP delay duration in minutes
	Selects the number of minutes the compressor(s) will be locked out after turning off. This delay will run simultaneously with any delay built into the equipment.				
6	**Adaptive Recovery Mode (ARM™)**	REC	OF	OF	Adaptive Recovery Mode is disabled
				ON	Adaptive Recovery Mode is enabled
	[Not available if non-programmable was selected in setting 1] During ARM, room temperature is recovered by turning on the heating or cooling up to 3-hours before the end of the set back period. The setpoint temperature is changed to that of the upcoming program temperature.				

5 INSTALLER SETTINGS

No.	Installer Setting	Displayed	Default Setting	Available Settings	Description of Available Settings
7	**Heat Setpoint Upper Limit**	HIGH HEAT	90	90 - 45 (32° to 7°C)	Select a Heat Setpoint Upper Limit of 90° to 45°F (32° to 7°C)
	Selects the upper setpoint adjustment limit that cannot be exceeded in heat mode.				
8	**Heat Setpoint Lower Limit**	LOW HEAT	45	45 - 90 (7° to 32°C)	Select a Heat Setpoint Lower Limit of 45° to 90°F (7° to 32°C)
	Selects the lower setpoint adjustment limit that cannot be exceeded in heat mode.				
9	**Cool Setpoint Lower Limit**	LOW COOL	45	45 - 90 (7° to 32°C)	Select a Cool Setpoint Lower Limit of 45° to 90°F (7° to 32°C)
	Selects the lower setpoint adjustment limit that cannot be exceeded in cool mode.				
10	**Cool Setpoint Upper Limit**	HIGH COOL	90	90 - 45 (32° to 7°C)	Select a Cool Setpoint Upper Limit of 90° to 45°F (32° to 7°C)
	Selects the upper setpoint adjustment limit that cannot be exceeded in cool mode.				
11	**Installer Lock**	INST	NO	NO	Installer Lock disabled
				Y	Installer Lock enabled
	When enabled, a 4-digit lock code can be entered in setting 12. This lock code will be required the next time the Installer Settings menu is accessed. Select NO to skip the installer lock.				
12	**Installer Lock Code**	IL	0000	0-9	Select 0-9 for each digit
	[Only available if Installer Lock was enabled in setting 11] Select a 4-digit lock code (0-9 for each digit) to lock the Installer Settings menu. The code 0000 is not a valid lock code and cannot be used.				
13	**Installer Clear (factory reset)**	CLR	NO	NO	Clear disabled - No changes made
				Y	Clear enabled - Factory Reset
	Selecting Y (YES) will return thermostat to all factory default settings. Factory reset will take affect upon exiting Installer settings menu.				

Additional options such as Service Monitors, clock, etc. are located in the User Settings – See User Manual.

6 SYSTEM TESTING

⚠ 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 the COOL mode of operation if the outside temperature is below 50º F (10º 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 compressor from short cycling. When testing the system, make sure to take this delay into account.

NOTE: *The compressor delay can be bypassed by adjusting Installer Setting 5 - See section 5.*

1. Move the **SYSTEM** switch to HEAT mode.
2. Press the ∧ button to raise the set temperature a minimum of 3 degrees above the current room temperature. The system should start within a few seconds. With a gas heating system, the fan may not start right away.
3. Move the **SYSTEM** switch to OFF mode. Allow the heating system to fully shut down.
4. Move the **SYSTEM** switch to COOL mode.
5. Press the ∨ button to lower the set temperature a minimum of 3 degrees below the current room temperature. The system should start within a few seconds (unless compressor short cycle protection is active – See note above).
6. Move the **SYSTEM** switch to OFF mode. Allow the cooling system to fully shut down.
7. Move the **FAN** switch to FAN ON mode. The system fan should start within a few seconds.
8. Move the **FAN** switch to FAN AUTO mode. Allow the system fan to turn off.

Limited Warranty

When installed by a professional contractor, this product is backed by a 5 year limited warranty. Limitations apply. For limitations, terms and conditions, you may obtain a full copy of this warranty:

- Visit us online: www.braeburnonline.com/warranty
- Call us: 866.268.5599
- Write us: Braeburn Systems LLC
  2215 Cornell Avenue
  Montgomery, IL 60538

Installer - store this manual for future reference

Braeburn Systems LLC
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Technical Assistance: www.braeburnonline.com
Call us toll-free: 866-268-5599 (U.S.)
630-844-1968 (Outside the U.S.)