Programmable Touch Screen Thermostat

1

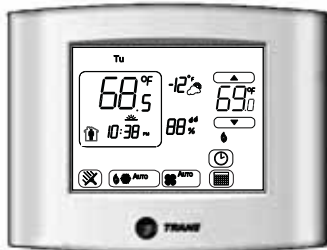**Ordering Numbers: X13511538010, BAYSTAT152A, THT02775**

Illustration shows a typical Home screen display.

⚠ **SAFETY WARNING**
Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

2

Warnings, Cautions, and Notices

Warnings, cautions, and notices are provided in appropriate places throughout this document:

⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTICE: Indicates a situation that may result in equipment or property-damage only accidents.

3

Specifications and Overall Dimensions

Category	Specifications/Descriptions
Input power:	24Vac, 50Hz or 60Hz (18Vac to 32Vac) **Note:** Frequency is selected using Configuration Option 0190.
Wire size:	18 to 22 AWG
Output terminal ratings:	1A resistive load @ 30Vac
Display type:	LCD/Touch
System modes:	• Heat • Cool • Auto • Off • Emergency Heat
Fan modes:	• On • Auto
Operating Temperature Range:	32°F to 122°F (0°C to 50°C)
Temperature display range:	-45°F to 199°F (-42.8°C to 92.8°C)
Temperature setpoint range:	• Heat Setpoint: 40°F to 90°F (4.0°C to 32°C) • Cool Setpoint: 50°F to 99°F (10°C to 37°C)
Humidity display range:	0% to 99% (1% steps)
Humidity setpoint range:	30% to 80% (1% steps)

5.90 in (150 mm)

1.30 in (33 mm)

4.65 in (118 mm)

0.3 in (8 mm)
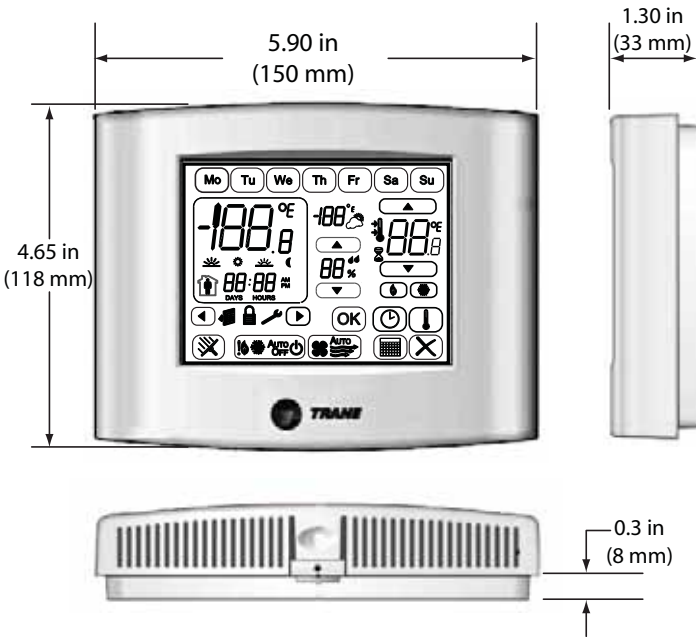
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Installation

⚠ *NOTICE*
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

⚠ *NOTICE*
Equipment Damage!

Applying excessive voltage to the thermostat will permanently damage it.

To mount the backplate:
1. Shut off the power to all HVAC equipment. If the security screw is used, remove it. Refer to the illustration.
2. Push the cover thumb tab to release the cover from the backplate as shown.
3. Route the wires through the opening in the backplate. Wires should be marked to ensure proper connection to terminals.
4. If mounting the backplate directly to a wall surface, hold the backplate against the surface and then level and mark the fastener locations.
5. Secure the backplate using appropriate fasteners. The thermostat should be mounted level and plumb for best air movement through the thermostat enclosure.
6. Locate the terminal blocks from the packaging (new installation) or remove from pin header (existing installation).
7. Connect the wires to the terminal blocks and then push the terminal blocks onto the circuit board pins.
8. Push excess wire through the hole in the wall cavity or into the junction box. Do not coil excess wire between the thermostat and the backplate.

Push cover thumb tab to release cover from backplate.
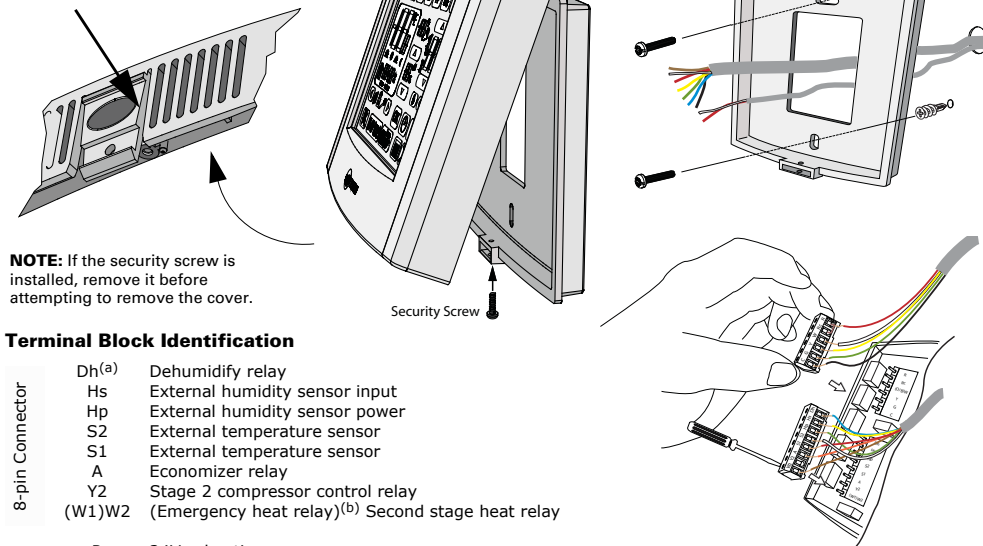
NOTE: If the security screw is installed, remove it before attempting to remove the cover.

Security Screw

Terminal Block Identification

8-pin Connector

Dh(a)	Dehumidify relay
Hs	External humidity sensor input
Hp	External humidity sensor power
S2	External temperature sensor
S1	External temperature sensor
A	Economizer relay
Y2	Stage 2 compressor control relay
(W1)W2	(Emergency heat relay)(b) Second stage heat relay

6-pin Connector

R	24Vac heating
	Important: Terminal shipped with jumper connected. Remove jumper if the heat/cool 24 Vac power supplies are separate.
Rc	24Vac cooling
	Important: Terminal shipped with jumper connected. Remove jumper if the heat/cool 24 Vac power supplies are separate.
(O/B)W	(Changeover valve)(b) Heat relay
Y	Stage 1 compressor control relay
G	Fan relay
C	Common

(a) Label order above is how they appear on the thermostat terminal block.
(b) Text in parentheses indicates that it applies to heat pump systems.

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Configuration

⚠ *NOTICE*
Adverse Control System Behavior!

Improper configuration setup could cause unwanted, possibly adverse control system behavior. Be sure to configure the thermostat according to your system type.

To change the installation configuration:
1. Apply electrical power to the thermostat.
2. Determine the configuration options and then write down the selections or other notes on the table in Panel 6.
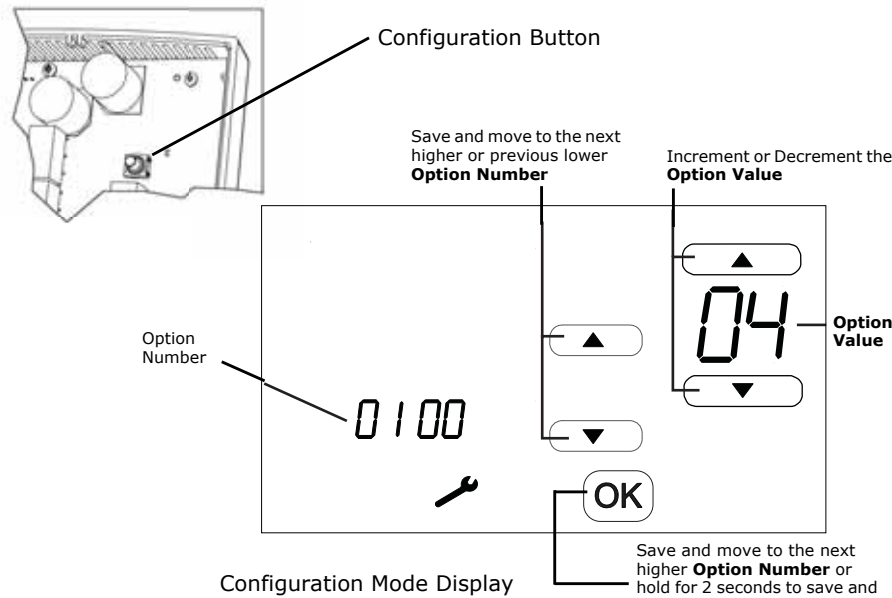3. To activate **Configuration Option Setup** mode:

⚠ **WARNING**
Live Electrical Components!

The circuit board is energized. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform this step. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

a. Remove the thermostat cover.
b. Press and hold the **Configuration** button for 3 seconds. The configuration wrench icon 🔧 displays along with the configuration option number and value.

4. Press the center ▲ or ▼ (as shown) to increment or decrement the **Option Number**.
   Note: Changing the Option Number with the up/down arrows will also Save the Option Value. In addition, the OK will increment the Option Number and Save the Option Value.

5. Press the right side ▲ or ▼ (as shown) to increment or decrement the **Option Value**.
6. Any of the following actions will save settings, exit Configuration Mode, and return to the Home screen:
   • Push the configuration button momentarily (less than 3 seconds)
   • Touch and hold OK for 2 seconds
   • A 10-minute time out after the last touch in Configuration Mode

Configuration Button

Save and move to the next higher or previous lower **Option Number**

Increment or Decrement the **Option Value**

Option Number

Option Value

Configuration Mode Display

Save and move to the next higher **Option Number** or hold for 2 seconds to save and exit **Configuration Mode**

Installation Options

Table 1.   Installer configuration setup menu

No.	Name	Def	Values/Descriptions	Notes
0100	Temperature indication/Resolution	0	• 0= °F, 1 degree resolution • 1= °F, 0.5 degree resolution • 2= °C, 1 degree resolution • 3= °C with 0.5 degree resolution • 4= °C with 0.1 degree resolution	This setting affects indoor temperature display and setpoint display resolutions. Outdoor temperature display area resolution is always +/-1 for both F and C. Refer to Option 0210.
0110	Clock Format	12	• 12= 12-hours clock • 24= 24-hour clock	
0120	Year	11	• 11–99	Available year range: 2011–2099. This value is updated to the real time clock after setting. Day of the week is updated automatically.
0121	Month	1	• 1–12	This value is updated to the real time clock after setting. Day of the week is updated automatically.
0122	Day	1	• 1–31	Month dependent; this value is updated to the real time clock after setting. Day of the week is updated automatically.
0125	Daylight Savings	2	• 0= Disabled • 1= US (1987), changeover at 2:00am • 2= US (2007), changeover at 2:00am • 3= Europe, changeover at 1:00am • 4= Manual, changeover at 2:00am	
0126 0127 0128 0129	• Spring Ahead Month • Spring Ahead Day • Fall Back Month • Fall Back Day	• 03 • 01 • 11 • 01	• 01-12 • 01-31 • 01-12 • 01-31	Options available only if 0125 is set to 4.
0130	System Selection	8	• 1= 1H/1C (Conv) 1st Stage Heat (W), 1st Stage Comp (Y), Fan (G) • 2= 1H/1C (HP) 1st Stage Comp (Y), Changeover (O/B), Fan (G) • 3= 1H (Conv) 1st Stage Heat (W), without fan • 4= 1H (Conv) 1st Stage Heat (W), Fan (G) • 5= 1C (Conv) 1st Stage Comp (Y), Fan (G) • 6= 2H/1C (HP) 1st Stage Comp (Y), Changeover (O/B), Auxiliary Heat (W1), Fan (G) • 7= 2H/2C (Conv) 1st & 2nd Stage Heat (W,W2), 1st Stage Comp (Y,Y2), Fan (G) • 8= 2H/1C (Conv) 1st & 2nd Stage Heat (W,W2), 1st Stage Comp (Y), Fan (G) • 9= 1H/2C (Conv) 1st Stage Heat (W), 1st & 2nd Stage Comp (Y,Y2), Fan (G) • 10= 2H/2C (HP) 1st & 2nd Stage Comp (Y,Y2), Changeover (O/B), Fan (G) • 11= 3H/2C (HP) 1st & 2nd Stage Comp (Y,Y2), Changeover (O/B), Auxiliary Heat (W1), Fan (G)	
0140	Schedule Options	1	0=Non-programmable 1= Programmable	
0150	TOD/Economizer Output (Terminal A)	0	• 0= Unused • 1= TOD energizes terminal A during occupied period, not during unoccupied period.	2= Economizer energizes terminal A during a call for cool.	TOD is not available in Non-programmable Mode (refer to Option 0140).
0151	Heat Fan Operation	0	0= System controls fan 1= Thermostat controls fan	Only shown for conventional system with heat stages and fan capability. For heat pump, the fan relay operates with thermostat control.
0153	Reversing Value O/B	0	0= O/B **ON** when call for cool 1= O/B **ON** when call for heat	Only shown for heat pump systems.
0160	Cycles Per Hour (CPH) [First Stage Compressor]	3	1–5	Only for systems with cool or HP stage. Refer to 0130. Selection in this stage changes 2nd stage cool default CPH.
0161	CPH (Second Stage Compressor)	3	1–5	Only for systems with 2-cool or HP stages. Refer to Option 0130.
0162	CPH (First Stage Conventional Heat)	5	1–10	Only for conventional systems with heat stages. Refer to Option 0130. Selection in this stage changes default CPH of 2nd stage heat.
0163	CPH (Second Stage Conventional heat)	9	1–10	Only for conventional systems with two stages of conventional heat.
0164	CPH for Auxiliary Heat	9	1–10	Only shown for 2H/1C HP or 3H/2C HP systems. Refer to Option 0130.
0165	CPH for Emergency Heat	9	1–10	Only shown for 2H/1C HP or 3H/2C HP systems. Refer to Option 0130.
0170	Continuous Backlight	0	0= Backlight **ON** time is limited 1= Backlight **ON** continuously	
0180	Changeover	1	0= Manual 1= Auto	Only for systems with both heat and cool stages. Refer to Option 0130.
0181	Deadband	3	• 2= 2°F (1°C) • 3= 3°F (1.5°C) • 4= 4°F (2.0°C) • 5= 5°F (2.5°C) • 6= 6°F (3.0°C) • 7= 7°F (3.5°C) • 8= 8°F (4.0°C) • 9= 9°F (4.5°C)	Only applies to auto or manual changeover systems. Refer to Option 0180.
0182	Minimum Compressor Off Time	5	• 0= 0 minutes • 1= 1 minute • 2= 2 minutes • 3= 3 minutes • 4= 4 minutes • 5= 5 minutes	Only for systems with cool stage or heat pump. Refer to Option 0130. This setting will extend the compressor **OFF** time beyond any other delays that are incorporated into the Heat/Cool software algorithm.
0190	Power Supply Frequency	0	0= 60 Hz 1= 50 Hz	Power supply input is 24 Vac nominal at either 60 Hz or 50 Hz.
0200	Dehumidify Sensor Selection	1	• 0= Humidity display and function is disabled • 1= Internal humidity sensor enabled	2= External humidity sensor enable	For external humidity control, a 4–20 mA humidity sensor should be connected to the Hp and Hs terminals to avoid error code **E1**.

Table 1.   Installer configuration setup menu (continued)

No.	Name	Def	Values/Descriptions	Notes
0205	Dehumidification Control	0	0= Active Control 1= Passive Control	Active control toggles Dh output terminal On and Off as specified by the dehumidify algorithm and is used with a device having its own dehumidification equipment. Passive control runs cool mode for up to 1 extra minute whenever there is a call for cool and dehumidification.
0206	Internal Humidity Offset Adjustment	0	-9% to 9% in 1% increments	Allows adjustment of the internal relative humidity reading to account for accuracy, tolerance, and potential drift. FW should use the adjusted value for display and humidity control.
0207	External Humidity Offset Adjustment	0	-9% to 9% in 1% increments	Allows adjustment of the external relative humidity reading to account for accuracy, tolerance, and potential drift. FW should use the adjusted value for display and humidity control.
0210	Temperature Sensor Selection	0	• 0= Internal sensor only (10k) • 1= Internal sensor for H/C control (outdoor for display only) [10k] • 2= internal sensor for H/C control (outdoor for Compr/Aux lockout control([10k]	• 3= Remote indoor sensor for H/C control (10k) • 4= Use average temperature = (local+S1/S2)/2 for H/C control.	Setting 2 applies only to HP systems and is disabled on all conventional systems. For setting 1, 2, or 4; if either temperature sensor is out of range, then the E0 error code will display.
0220	Heat Pump Compressor Lockout Point	0	• 0= None • 15= 15°F (−9.5°C) • 20= 20°F (−6.5°C) • 25= 25°F (−4.0°C)	• 30= 30°F (−1.0°C) • 35= 35°F (1.5°C) • 40= 40°F (4.5°C) • 45= 45°F (7.0°C)	Only for heat pump systems with more heat stages than cool stages and remote outdoor control sensor. Refer to 0130 and 0210. **Note:** A 5°F (2.5°C) deadband between heat pump and auxiliary lockout will be enforced.
0221	Heat Pump Auxiliary Lockout Point	0	• 0= None • 40= 40°F (4.5°C) • 45= 45°F (7.0°C)	• 50= 50°F (10.0°C) • 55= 55°F (13.0°C) • 60= 60°F (15.5°C)	Only for heat pump systems with more heat stages than cool stages and remote outdoor control sensor. Refer to 0130 and 0210. **Note:** A 5°F (2.5°C) deadband between heat pump and compressor lockout will be enforced.
0230	Temporary Override Duration Limit	3	• 0= zero hours • 1= one hour • 2= two hours	• 3= three hours • 4= four hours	Used for temporary override (TOV) starting duration time. Setting of zero *does not* disable TOV.
0231	Starting Default Number of Periods	2	2= two periods 4= four periods	Provides a starting default number of periods for all days of the week.
0232	Starting Default Period Occ/Unocc Definitions	4	**If option #0231 is set to 2** Day—**Night** • 0= UnOcc—**UnOcc** • 1= UnOcc—**Occ** • 2= UnOcc—**UnOcc** • 3= UnOcc—**Occ** • 4= Occ—**UnOcc** • 5= Occ—**Occ** • 6= Occ—**UnOcc** • 7= Occ—**Occ** • 8= UnOcc—**UnOcc** • 9= UnOcc—**Occ** • 10= UnOcc—**UnOcc** • 11= UnOcc—**Occ** • 12= Occ—**UnOcc** • 13= Occ—**Occ** • 14= Occ—**UnOcc** • 15= Occ—**Occ**	**If option #0231 is set to 4** Morn—**Day**—Evening—**Night** • 0= UnOcc—**UnOcc**—Unocc—**Occ** • 1= UnOcc—**Occ**—Unocc—**Occ** • 2= UnOcc—**UnOcc**—Occ—**UnOcc** • 3= UnOcc—**Unocc**—Occ—**Occ** • 4= Occ—**Occ**—UnOcc—**UnOcc** • 5= UnOcc—**Occ**—UnOcc—**Occ** • 6= UnOcc—**Occ**—Occ—**UnOcc** • 7= UnOcc—**Occ**—Occ—**Occ** • 8= Occ—**UnOcc**—UnOcc—**UnOcc** • 9= Occ—**UnOcc**—UnOcc—**Occ** • 10= Occ—**UnOcc**—Occ—**UnOcc** • 11= Occ—**UnOcc**—Occ—**Occ** • 12= Occ—**Occ**—UnOcc—**UnOcc** • 13= Occ—**Occ**—UnOcc—**Occ** • 14= Occ—**Occ**—Occ—**UnOcc** • 15= Occ—**Occ**—Occ—**Occ**	Occupancy setting can be changed during scheduling for each period/day.
0233	Days Options for Scheduling Mode	3	• 0= 1 day; Mo-Su all days share the same schedule • 1= 5+1+1 days; Mo-Fr share a schedule. Sa and Su each have an independent schedule	• 2= 5+2 days; Mo-Fr share a schedule. Sa-Su share a schedule. • 3= 7 days; Each day has an independent schedule	Any value toggle of this option (0233) will reset the schedule to the default values of Options 0231 and 0232. In addition, it will return the schedule to default values.
0240	Heat Temperature Range	90	40–90; 40°F to 90°F 4-32; 4°C to 32°C	Only for systems with heat stage. Refer to Option 0130.
0241	Cool Temperature Range	50	50–99; 50°F to 99°F 10–37; 10°C to 37°C	Only for systems with cool stage. Refer to Option 0130.
0260	Temperature Display Offset	0	• −3= −3°F (−1.5°C) • −2= −2°F (−1.0°C) • −1= −1°F (−0.5°C) • 0= None	• 1= 1°F (0.5°C) • 2= 2°F (1.0°C) • 3= 3°F (1.5°C)	Only applies to control temperature and display temperature for internal and indoor remote sensor. Does not apply to outdoor temperature for display.
0270	Extended Fan-on Time Heat	0	0= Off 90= ninety seconds	This option is not available if option 0151=0 or if the system is cool only. Refer to Option 0130.
0271	Extended Fan-on Time Cool	0	0= Off 40= forty seconds	This option is not available for systems with heat only. Refer to Option 0130.
0275	Filter Change Indicator	1	• 0= OFF • 1= 30 days • 3= 90 days	• 4= 120 days • 6= 180 days • 12= 365 days	Filter change disabled in **OFF**. Timer values start on first power up or reset of an active filter icon.
0300	Restore Factory Defaults	0	0= No 1= Yes	No= No action; Yes= Resets all parameters to default except calendar/daylight savings time/system selection.