



**TRANE®**

# **824 Comfort Control Installation Guide**



ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

**IMPORTANT** — This Document is customer property and is to remain with this unit.

These instructions do not cover all variations in systems or provide for every possible contingency to be met in connection with the installation. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

**18-HD72D1-1**

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## 1. Safety

### WARNING

This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

### WARNING

**LIVE ELECTRICAL COMPONENTS!**  
 During installation, testing, servicing, and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

NOTE: Use 18-gauge color-coded thermostat cable for proper wiring. Shielded cable is not typically required.

Keep this wiring at least one foot away from large inductive loads such as Electronic Air Cleaners, motors, line starters, lighting ballasts and large distribution panels.

Failure to follow these wiring practices may introduce electrical interference (noise) which can cause erratic system operation.

All unused thermostat wire to be grounded at indoor unit chassis ground only. Shielded cable may be required if the above wiring guidelines cannot be met. Ground only one end of the shield to the system chassis.

## 2. Product Specifications

SPECIFICATION	DESCRIPTION
Product Model	TCONT824
Product	XL 824 Comfort Control
Size	5-1/2" x 3-3/8" x 1" (WxHxD)
Storage/Operating Temperature	-40°F to 175°F, 5% to 95% RH non-condensing
Input Power	24VAC
Power Consumption	7VA*
Wire Usage	18ga
System Modes	Auto, Heating, Cooling, Off, Emergency Heat
Fan Modes	Auto, On, Circulate
Cooling Setpoint Temperature Range	60°F to 99°F, 1°F resolution
Heating Setpoint Temperature Range	55°F to 90°F, 1°F resolution
Indoor Temperature Display Range	20°F to 119°F
Outdoor Temperature Display Range	-31°F to 119°F
Indoor Humidity Display Range	0% to 99%, 1°F resolution
Minimum Cycle Off Time Delay	Compressor: 5 minutes, Indoor Heat: 1 minute

\*On every application, 24VAC loads should be reviewed to be sure the indoor unit control power transformer is adequately sized.

## 3. General Information

### 3.1 Overview

The 824 Programmable Control has a 4-1/2"-inch color touch screen and offers a full-featured and easy-to-use interface. From individual daily schedules to WiFi™ enabled remote access, the 824 Control is one of the most advanced 24VAC Controls available today.

### 3.2 Features

- Nexia™ Home Intelligence included
- WiFi Enables
- Weather Forecast (via wireless home network)
- Easy to program
- Allergy Clean/Quick Clean Cycles
- Interactive 4.5" Color Touchscreen
- 1-Touch Presets
- Built-in Help Screens
- Operating Runtime Analysis
- System Alerts
- Lock Screen Security
- Custom Screen Options
- Ten Year Registered Warranty

### 3.3 Contents

- 1-Control
- 1-Sub-base
- 1-Screw Pack
  - 2-#6 18X1 Phillips slotted head mounting screws
  - 2-#6x1 Nylon Drywall Anchors
- 1-Installation Guide
- RJ-45 Holder and Screw
- 1-Quick Start Guide
- 1-USB OTG Adapter Cable (Micro-A plug to Standard-A receptacle)

## 4. Installation

### 4.1 Location

The 824 Control is designed for installation in climate controlled living spaces. Place the unit in a central location with good circulation.

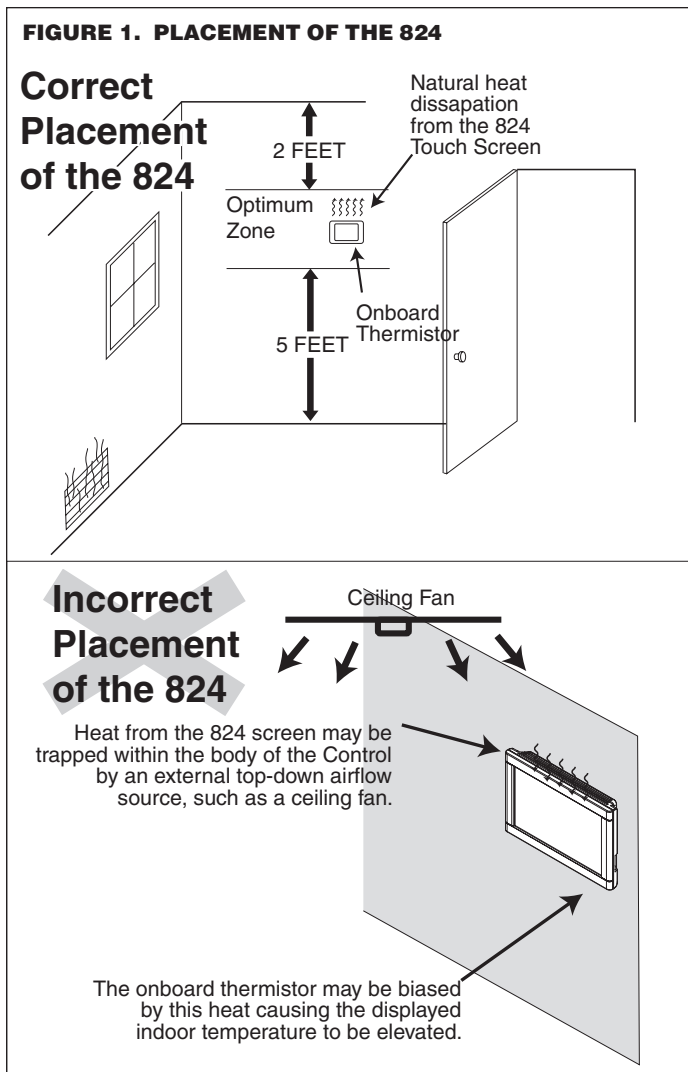
For proper temperature sensing, avoid mounting the Control where it will be exposed to heat radiated from lamps, sun light, fireplaces or any other radiant heat source.

Avoid locations close to windows, behind doors or alcoves with poor air circulation, adjoining outside walls, or doors that lead to the outside.

Select a location that prevents the Control from being directly exposed to air currents from supply registers or ceiling fans.

Mount the Control on a section of interior wall that does not contain hot or cold water pipes or duct work.

Important: The 824 Control utilizes a 4.5" color touch screen. This screen generates heat which is vented out the top of the Control utilizing natural convection. If an air source is directed at or from above, heat from the screen can be trapped within the Control body and can cause the indoor temperature to be biased. Refer to "Figure 1. Placement of the 824" on page 4



### 4.2 Network Connections

To take advantage of the full range of features on the 824 Control, it should be connected to the Internet. This is possible using either a wireless or a wired connection.

#### Wireless Connections

If the 824 Control will be connected to the Internet using the built-in wireless feature, choose a mounting location that ensures adequate signal strength from the internet router.

Tips to Help Maximize Signal Strength:

- Do not mount the Control more than 30 feet from the wireless router
- There should be no more than three interior walls between the Control and the router.
- Do not mount the Control in areas where electromagnetic emissions from other devices, appliances or wiring can interfere with the Control's communication. (i.e. wireless phones, security systems, wireless internet cameras).
- Do not mount the Control in recessed areas, near metal objects, or near structures. (i.e. doors, appliances, entertainment centers or shelving units).
- Do not mount the Control closer than 2 inches to any pipes, duct work, or other metal obstructions.
- Do not have metal obstructions, concrete or brick walls between the Control and the router it.

#### Wired Connections

The 824 Control may be connected to the Internet using its built-in RJ-45 connector. When using a wired connection, verify that a CAT 5 or better Ethernet cable with a male RJ-45 connector is present from the router to the Control.

### 4.3 Mounting

Follow these steps to mount the 824 Control to the wall.

1. Turn OFF all power to heating and cooling equipment.
2. If an existing thermostat is being replaced:
  - a. Remove the existing thermostat from the wall.
  - b. Record color and terminal marking of each wire.
  - c. Disconnect the wires from the existing thermostat being careful not to allow them to fall back into the wall.
3. Carefully pry the sub-base away from the 824 Control using a small flat-blade screwdriver. Note that the tight fit is normal and ensures that the Control is held securely to the sub-base when mounted on the wall.
4. Route the thermostat wires through the opening on the sub-base.
5. If using a wired Internet connection, route the Ethernet cable through the opening.
6. Place the sub-base against the wall in the desired location and mark the wall through the mounting holes. If you are using a wired Internet connection, be sure to mark the cutout for the RJ-45 Holder (see "Figure 2. Mark the Mounting Holes").

7. Drill the holes in the wall where marked.

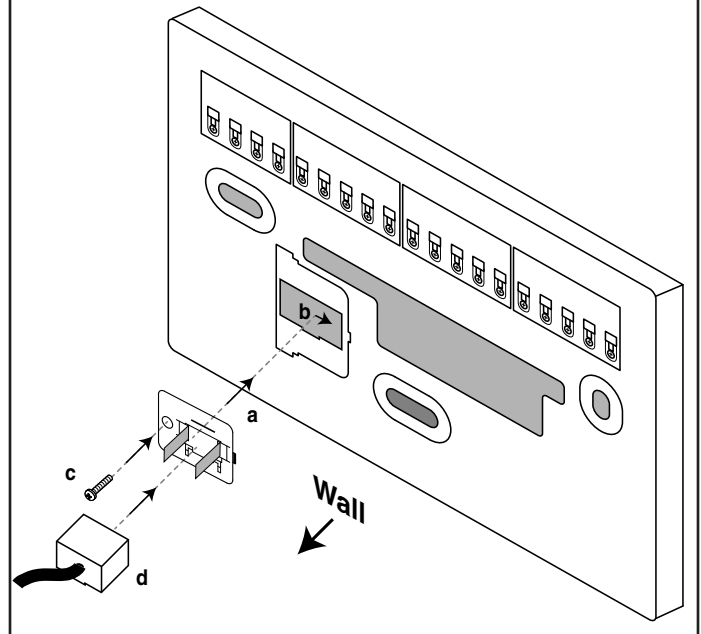
**If you are using a wireless Internet connection, skip to step 9.**

8. If using a wired Ethernet connection, follow these step and refer to “Figure 3. Attach RJ-45 Holder to Sub-base”.
  - a. With the Sub-base and RJ-45 Holder oriented as shown, press the holder into the Sub-base.
  - b. Slide the holder to the right so it snaps in place.
  - c. Secure the holder with the provided screw.
  - d. Insert the RJ-45 Connector into the RJ-45 Holder until it snaps into place.
9. Mount the sub-base to the wall using included mounting screws and drywall anchors (if necessary). An optional mounting hole is available for more secure mounting, if needed. Make sure all wires extend through the hole in the sub-base see “Figure 4. Mount the Sub-base to the Wall”.

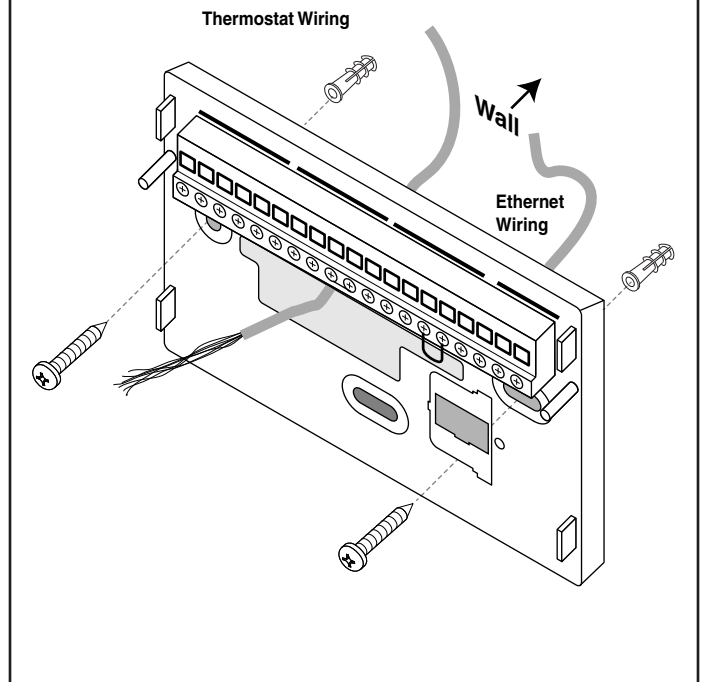
#### 4.4 Wiring

1. Adjust the length and position of each wire to reach the proper terminal on the connector block of the sub-base. Strip 1/4” of insulation from each wire. Do not allow adjacent wires to short together when connected.
2. Match and connect control wires to the proper terminals on the connector block. Refer to Field Wiring Diagrams included in this document.
3. Push excess wire back into the wall and seal the hole to prevent air leaks. NOTE: Air Leaks in the wall behind the Control can cause improper operation.
4. Attach the Control to the sub-base.
5. Turn ON power to the heating and cooling equipment.

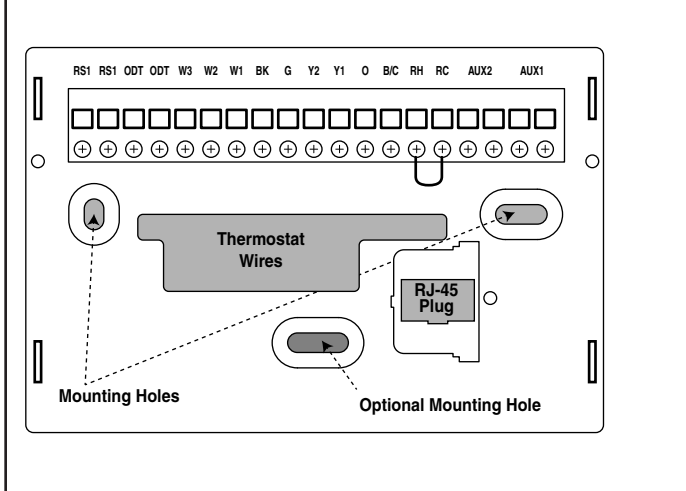
**FIGURE 3. ATTACH RJ-45 HOLDER TO SUB-BASE**



**FIGURE 4. MOUNT THE SUB-BASE TO THE WALL**



**FIGURE 2. MARK THE MOUNTING HOLES**



## Field Wiring Connection Diagrams

### Heat/Cool Diagrams

PAGE	DIAGRAM	DESCRIPTION
7	DIAGRAM 1	1 OR 2 STAGE COOLING W/TAM7 MODEL VARIABLE SPEED AIR HANDLER
7	DIAGRAM 2	1 STAGE COOLING W/GAM5A OR TAM4 MODEL AIR HANDLER
8	DIAGRAM 3	1 STAGE COOLING W/GAM5B MODEL VARIABLE SPEED AIR HANDLER
8	DIAGRAM 4	2 STAGE COOLING W/GAM5B MODEL AIR HANDLER
9	DIAGRAM 5	1 STAGE COOLING W/GAF2-S MODEL AIR HANDLER
9	DIAGRAM 6	1 STAGE COOLING W/GAF2-36M MODEL AIR HANDLER
10	DIAGRAM 7	1 STAGE COOLING W/GAT2 & GAM2 MODEL AIR HANDLER
10	DIAGRAM 8	1 STAGE COOLING W/TEM3 MODEL AIR HANDLER
11	DIAGRAM 9	1 STAGE COOLING W/NON-VARIABLE SPEED GAS FURNACE
11	DIAGRAM 10	1 OR 2 STAGE COOLING W/VARIABLE SPEED GAS FURNACE
12	DIAGRAM 11	1 STAGE COOLING W/NON-VARIABLE SPEED OIL FURNACE
12	DIAGRAM 12	1 OR 2 STAGE COOLING W/VARIABLE SPEED OIL FURNACE
13	DIAGRAM 13	PACKAGE SINGLE OR MULTI-STAGE HEAT/COOL W/VARIABLE SPEED BLOWER
13	DIAGRAM 14	PACKAGE SINGLE-STAGE HEAT/COOL W/VARIABLE SPEED BLOWER

### Heat Pump Diagrams

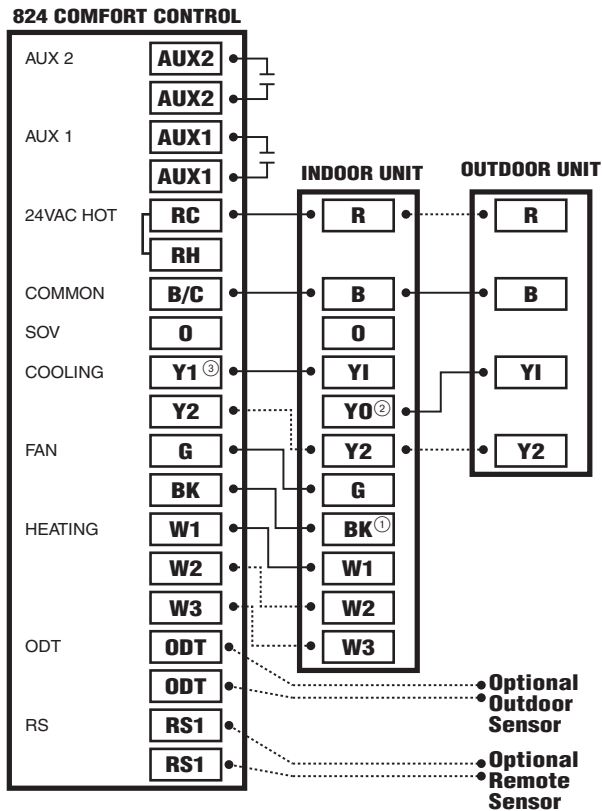
PAGE	DIAGRAM	DESCRIPTION
14	DIAGRAM 15	1 OR 2 STAGE HEAT PUMP W/TAM7 MODEL AIR HANDLER
14	DIAGRAM 16	1 STAGE HEAT PUMP W/GAM5A & TAM4 MODEL AIR HANDLER
15	DIAGRAM 17	1 STAGE HEAT PUMP W/GAM5B MODEL AIR HANDLER
15	DIAGRAM 18	2 STAGE HEAT PUMP W/GAM5B MODEL AIR HANDLER
16	DIAGRAM 19	1 STAGE HEAT PUMP W/GAF2-S MODEL AIR HANDLER
16	DIAGRAM 20	1 STAGE HEAT PUMP W/GAF2-36M MODEL AIR HANDLER
17	DIAGRAM 21	1 STAGE HEAT PUMP W/GAT2 & GAM2 MODEL AIR HANDLER
17	DIAGRAM 22	1 STAGE HEAT PUMP W/TEM3 MODEL AIR HANDLER

### Dual Fuel Diagrams

PAGE	DIAGRAM	DESCRIPTION
14 18	DIAGRAM 23	1 OR 2 STAGE HEAT PUMP W/VARIABLE SPEED GAS FURNACE
18	DIAGRAM 24	1 STAGE HEAT PUMP W/NON-VARIABLE SPEED GAS FURNACE
19	DIAGRAM 25	1 OR 2 STAGE HEAT PUMP W/VARIABLE SPEED OIL FURNACE
19	DIAGRAM 26	SINGLE STAGE HEAT PUMP W/NON-VARIABLE SPEED OIL FURNACE
20	DIAGRAM 27	PACKAGE SINGLE OR MULTI-STAGE DUAL FUEL W/VARIABLE SPEED BLOWER

## 4.5 Heating and Cooling Applications

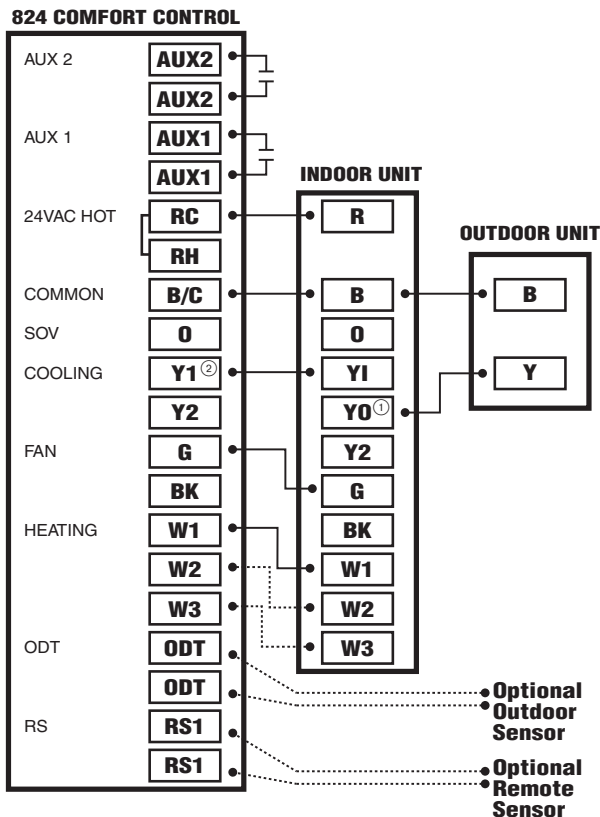
### Diagram 1 - 1 or 2 Stage Cooling w/TAM7 Model Variable Speed Air Handler



**NOTES:**

1. Cut and remove the "BK" jumper at the indoor unit AFC Board
2. "Y1" and "Y0" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
3. If a 3rd party overflow condensate switches are installed, wire between "Y1" of the 824 and "Y1" of the airflow control board
4. "R" and "Y2" connections at outdoor unit are required only for two stage units

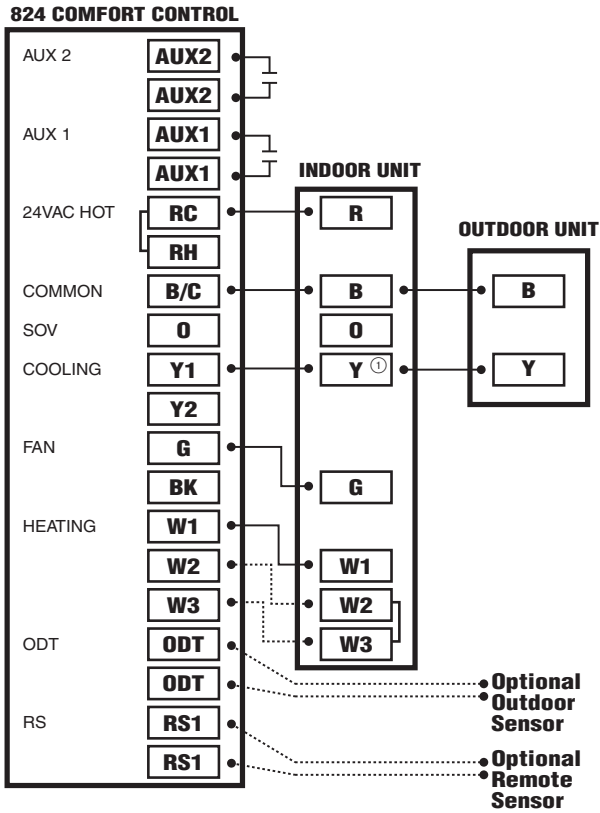
### Diagram 2 - 1 Stage Cooling w/GAM5A or TAM4 Model Air Handler



**NOTES:**

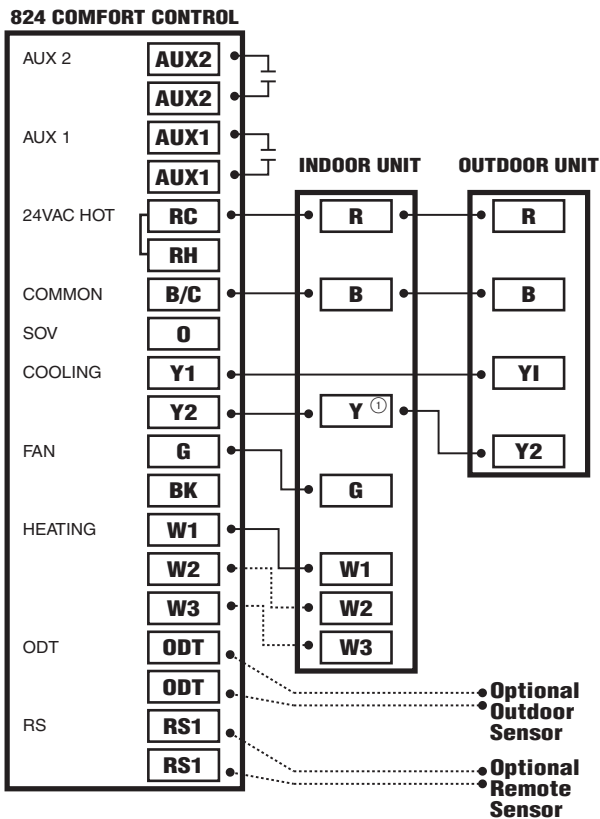
1. "Y1" and "Y0" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
2. If 3rd party overflow condensate switches are installed, wire between "Y1" of the 824 and "Y1" of the airflow control board

**Diagram 3 - 1 Stage Cooling w/GAM5B Model Variable Speed Air Handler**



**NOTES:**  
 1. "Y" terminal must be connected at indoor unit for high stage air flow

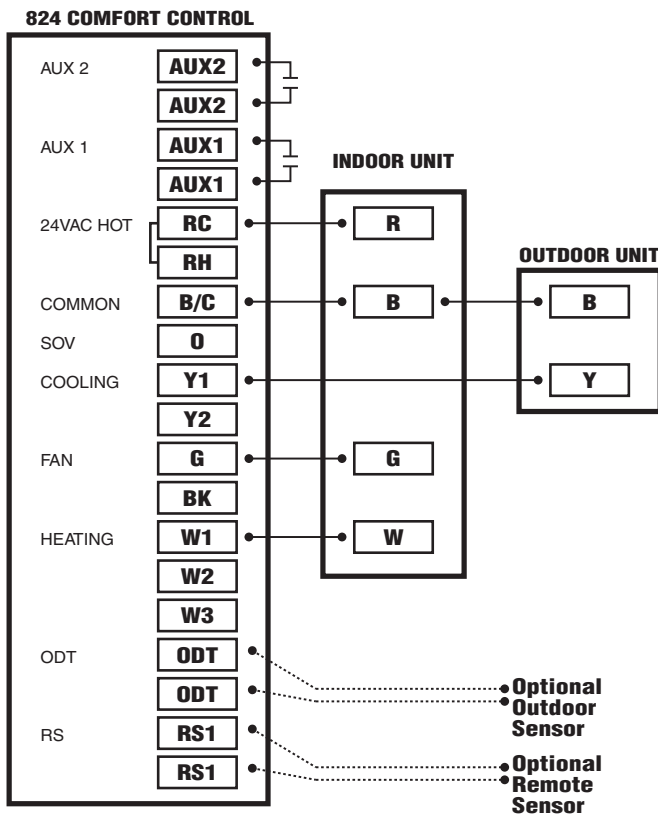
**Diagram 4 - 2 Stage Cooling w/GAM5B Model Air Handler**



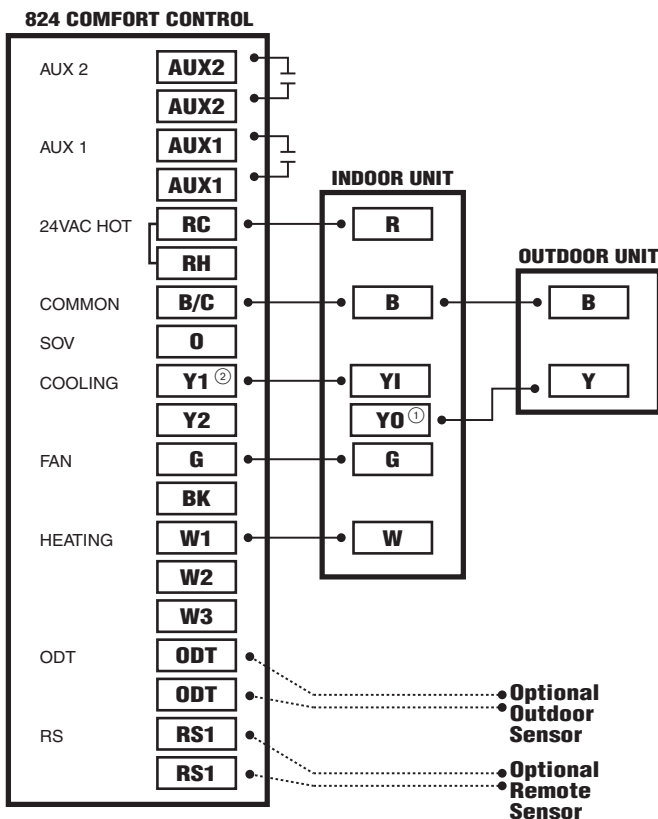
**NOTES:**  
 1. "Y" terminal must be connected at indoor unit for high stage air flow



**Diagram 5 - 1 Stage Cooling w/GAF2-S Model Air Handler**



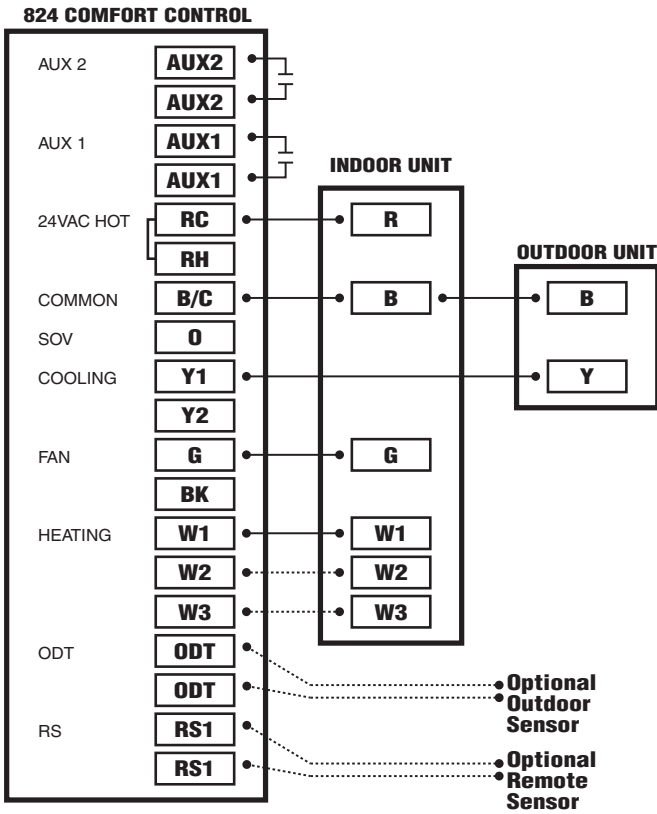
**Diagram 6 - 1 Stage Cooling w/GAF2-36M Model Air Handler**



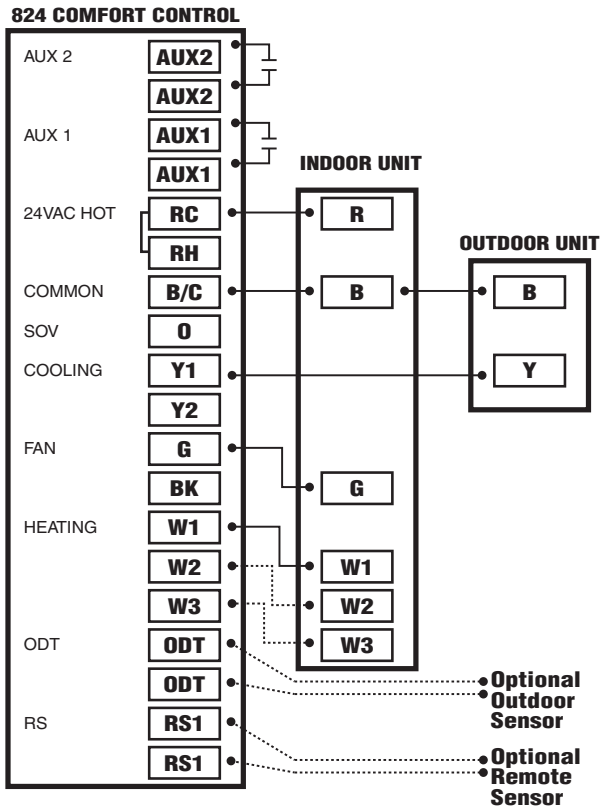
**NOTES:**

1. "YI" and "YO" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
2. If 3rd party overflow condensate switches are installed, wire between "Y1" of the 824 and "YI" of the airflow control board

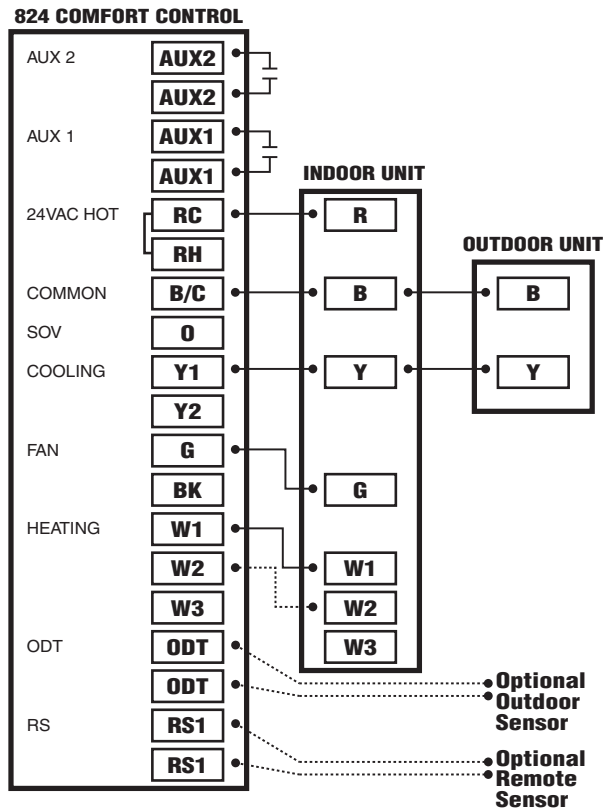
**Diagram 7 - 1 Stage Cooling w/GAT2 & GAM2 Model Air Handler**



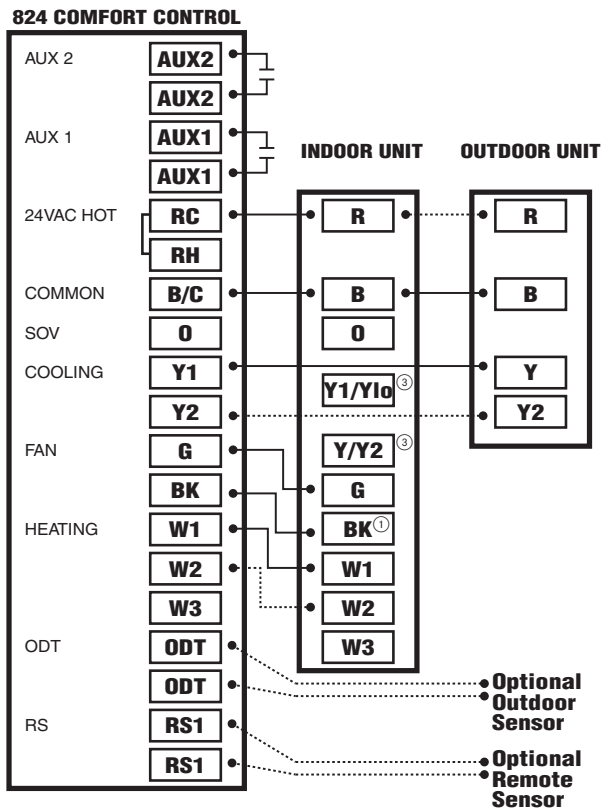
**Diagram 8 - 1 Stage Cooling w/TEM3 Model Air Handler**



**Diagram 9 - 1 Stage Cooling w/Non-Variable Speed Gas Furnace**



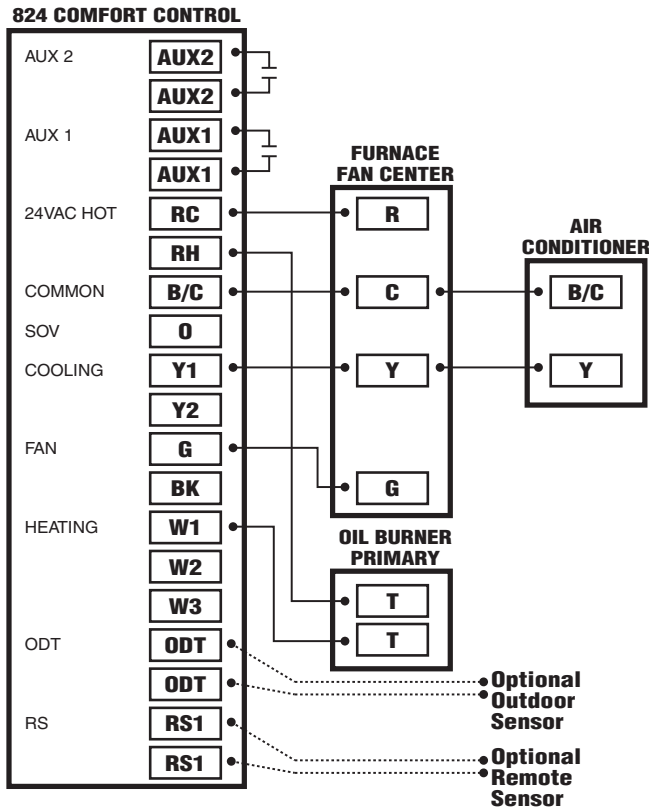
**Diagram 10 - 1 or 2 Stage Cooling w/Variable Speed Gas Furnace**



**NOTES:**

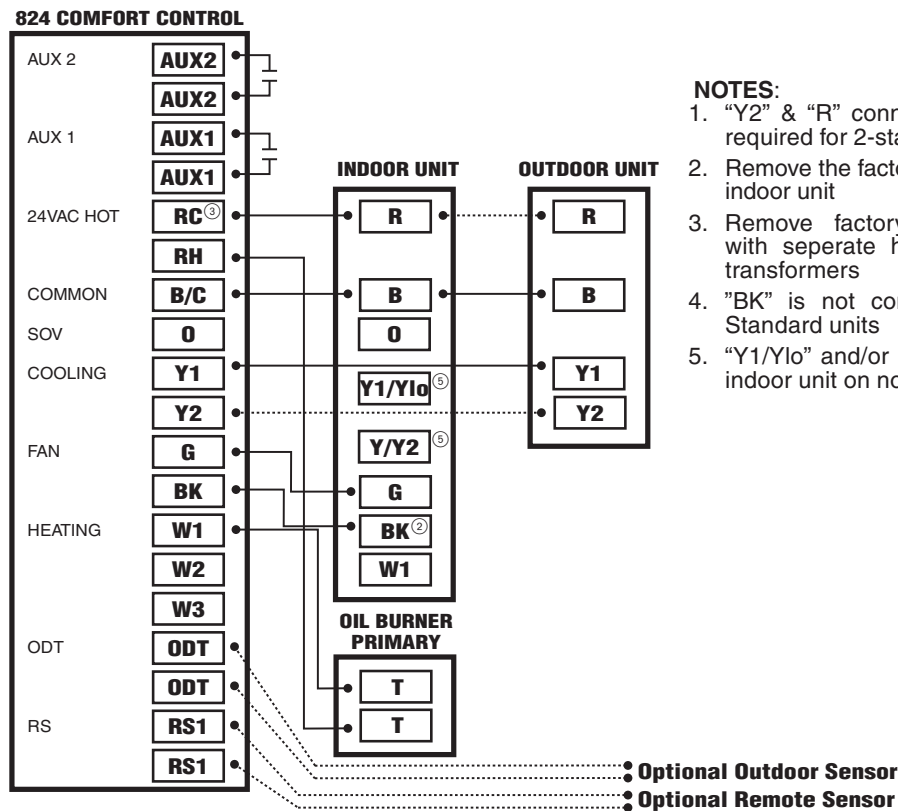
1. Cut and remove the factory installed "BK" jumper at the indoor unit IFC Board
2. "R" & "Y2" connections at outdoor are only required for two stage units
3. "Y1/Y1o and/or Y/Y2" must be connected at indoor for non-Trane/American Standards units

**Diagram 11 - 1 Stage Cooling w/Non-Variable Speed Oil Furnace**



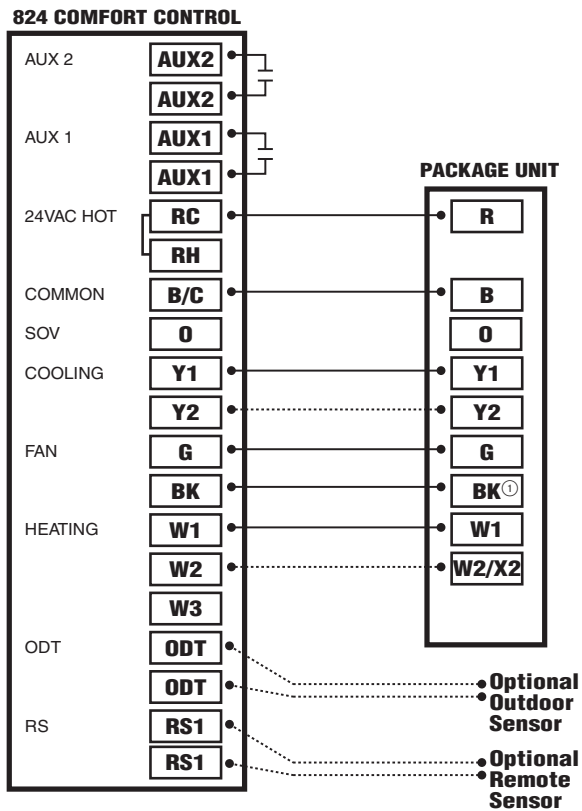
- NOTES:**
1. Remove factory RC/RH jumper for systems with separate heating and cooling low voltage transformers

**Diagram 12 - 1 or 2 Stage Cooling w/Variable Speed Oil Furnace**



- NOTES:**
1. "Y2" & "R" connections at outdoor unit are only required for 2-stage heat pumps
  2. Remove the factory installed jumper at "BK" on the indoor unit
  3. Remove factory RC/RH jumper for systems with separate heating and cooling low voltage transformers
  4. "BK" is not connected on non-Trane/American Standard units
  5. "Y1/Y1o" and/or "Y/Y2" must be connected at the indoor unit on non-Trane/American Standard units

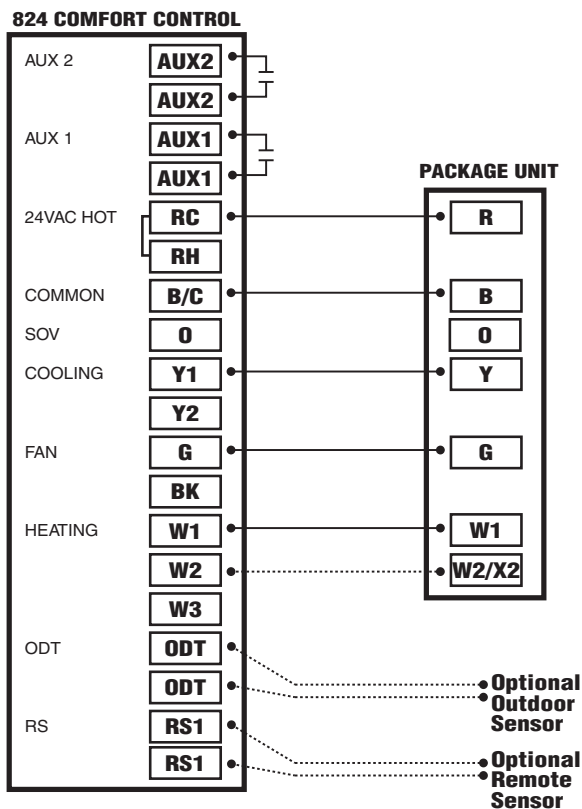
**Diagram 13 - Package Single or Multi-Stage Heat/Cool w/Variable Speed Blower**



**NOTES:**

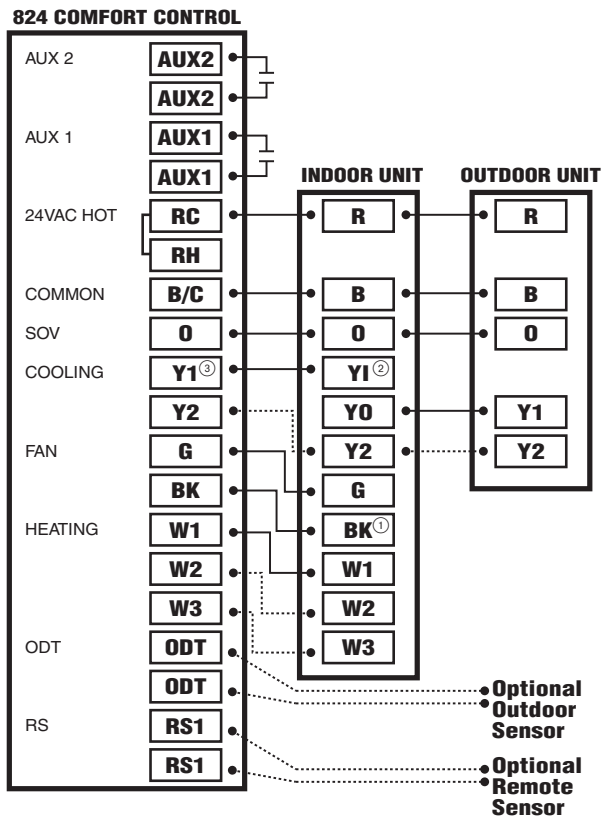
1. Cut and remove the factory installed jumper at "BK" on the ECM fan control board
2. "BK" is not connected on non-Trane/American Standard units

**Diagram 14 - Package Single-Stage Heat/Cool w/Variable Speed Blower**



## 4.6 Heat Pump Applications

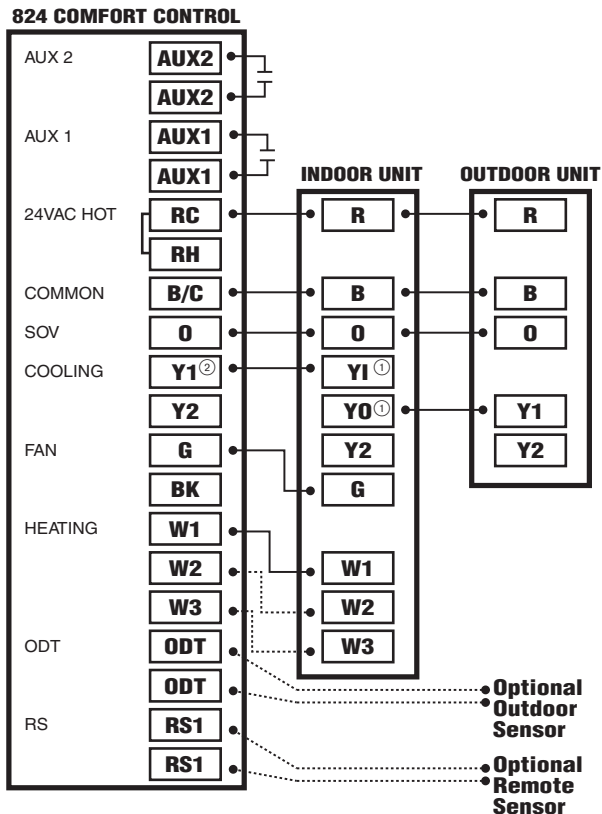
### Diagram 15 - 1 or 2 Stage Heat Pump w/TAM7 Model Air Handler



**NOTES:**

1. Remove the factory installed "BK" jumper at the indoor unit's AFC Board
2. "Y1" and "YO" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
3. Wire 3rd party condensate overflow switches between "Y1" of the 824 and "Y1" of the airflow control board

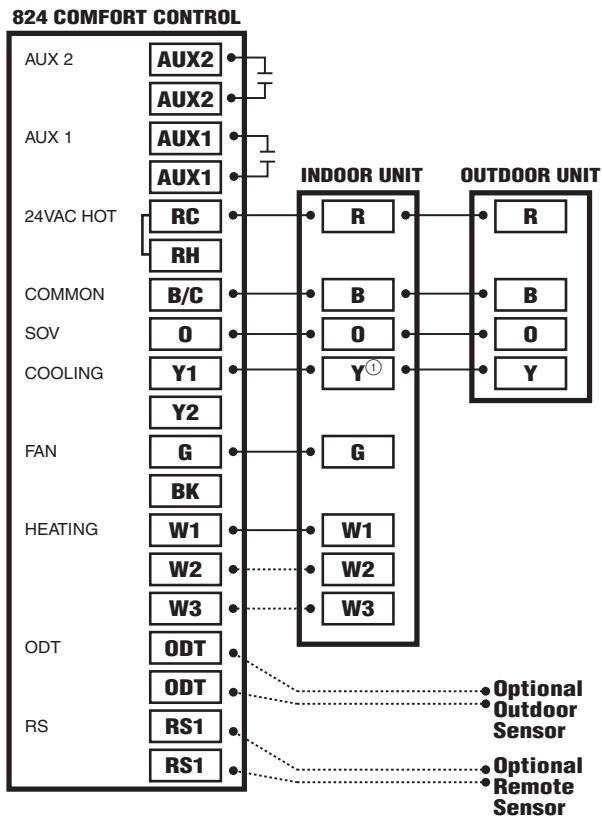
### Diagram 16 - 1 Stage Heat Pump w/GAM5A & TAM4 Model Air Handler



**NOTES:**

1. "Y1" and "YO" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
2. Wire 3rd party condensate overflow switches between "Y1" of the 824 and "Y1" of the airflow control board

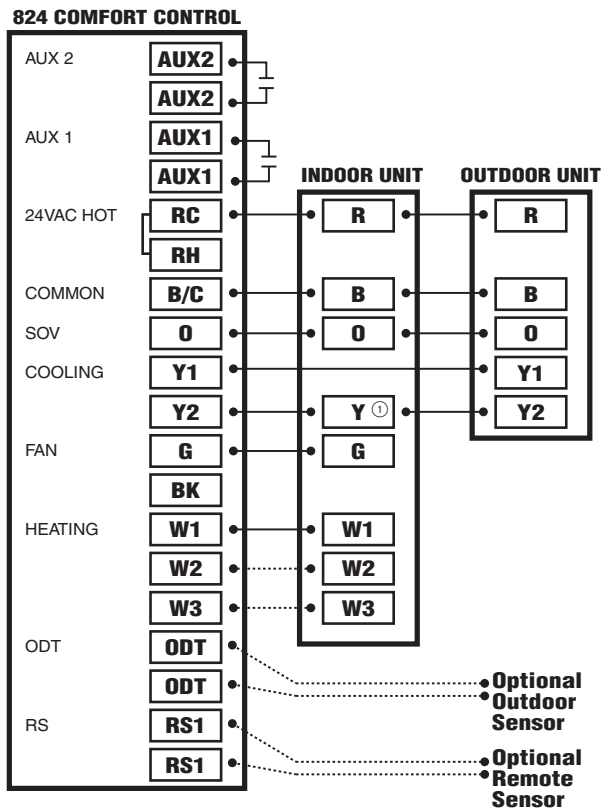
**Diagram 17 - 1 Stage Heat Pump w/GAM5B Model Air Handler**



**NOTES:**

1. "Y" terminal must be connected at indoor unit for high stage air flow

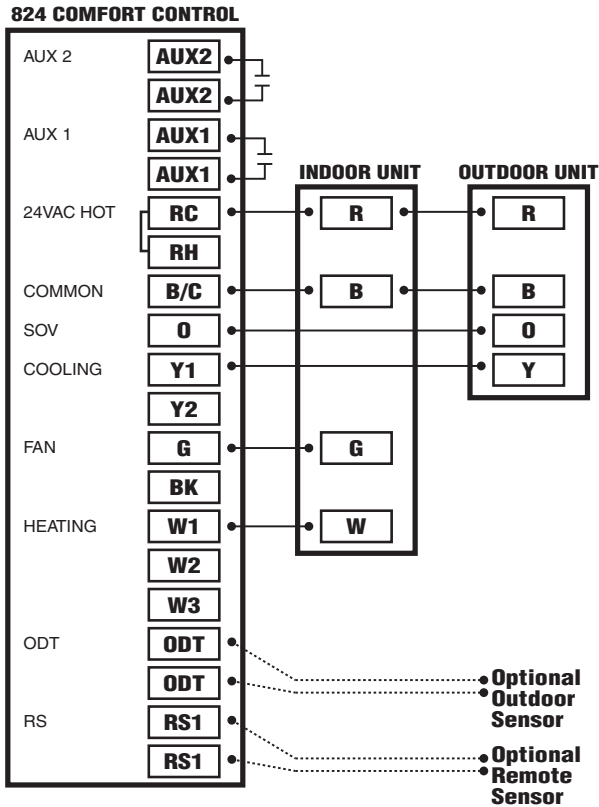
**Diagram 18 - 2 Stage Heat Pump w/GAM5B Model Air Handler**



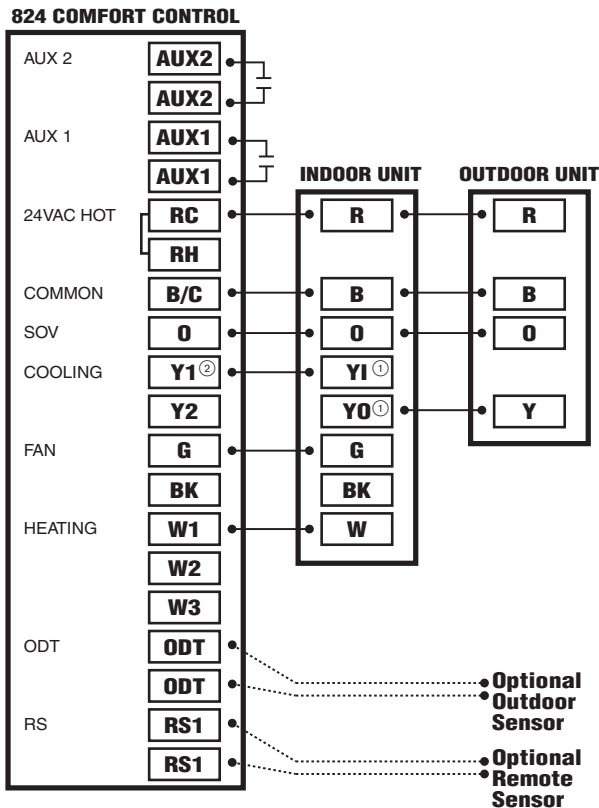
**NOTES:**

1. "Y" terminal must be connected at indoor unit for high stage air flow

**Diagram 19 - 1 Stage Heat Pump w/GAF2-S Model Air Handler**



**Diagram 20 - 1 Stage Heat Pump w/GAF2-36M Model Air Handler**

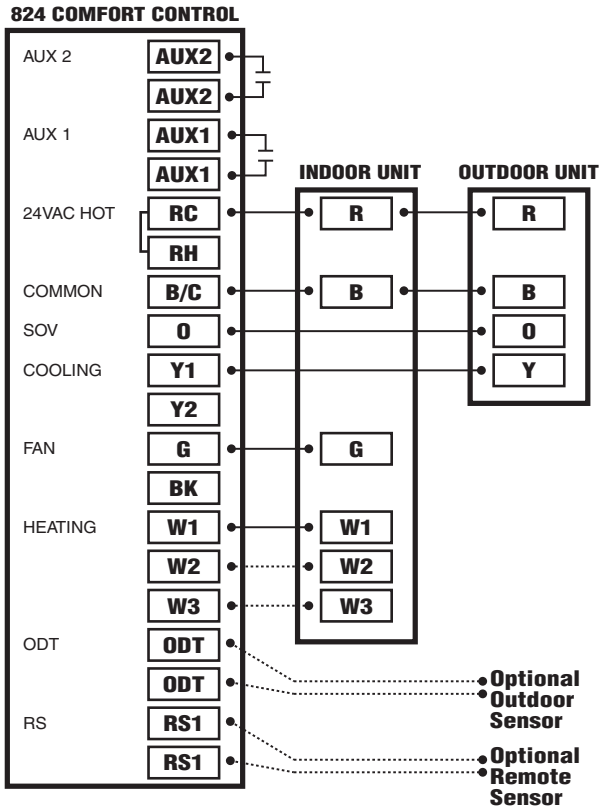


**NOTES:**

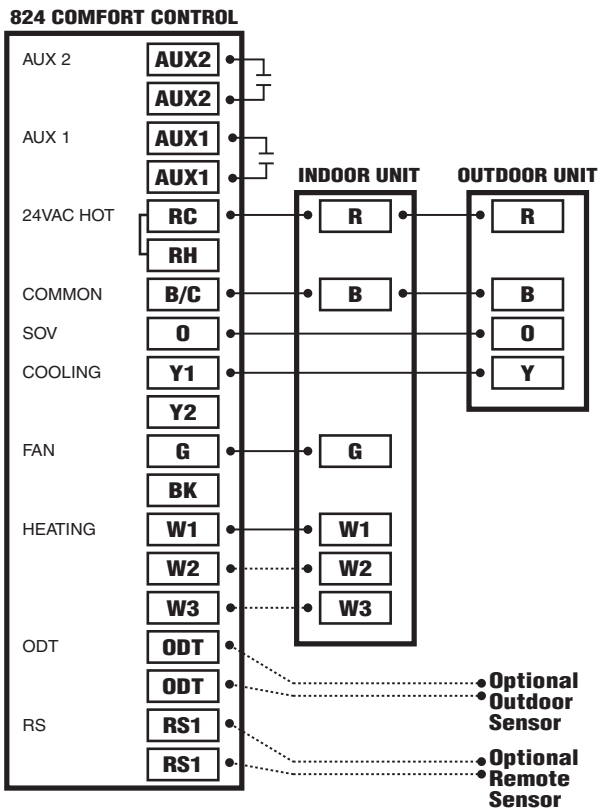
1. "Y1" and "YO" connections must be made as shown for freeze protection and internally mounted condensate overflow circuits to function properly
2. Wire 3rd party condensate overflow switches between "Y1" of the 824 and "Y1" of the airflow control board



**Diagram 21 - 1 Stage Heat Pump w/GAT2 & GAM2 Model Air Handler**

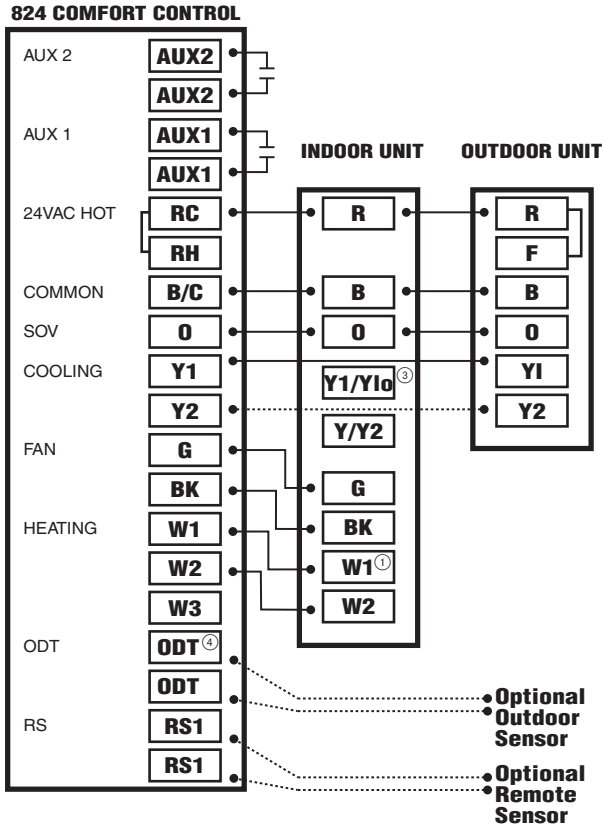


**Diagram 22 - 1 Stage Heat Pump w/TEM3 Model Air Handler**



### 4.7 Dual Fuel Applications

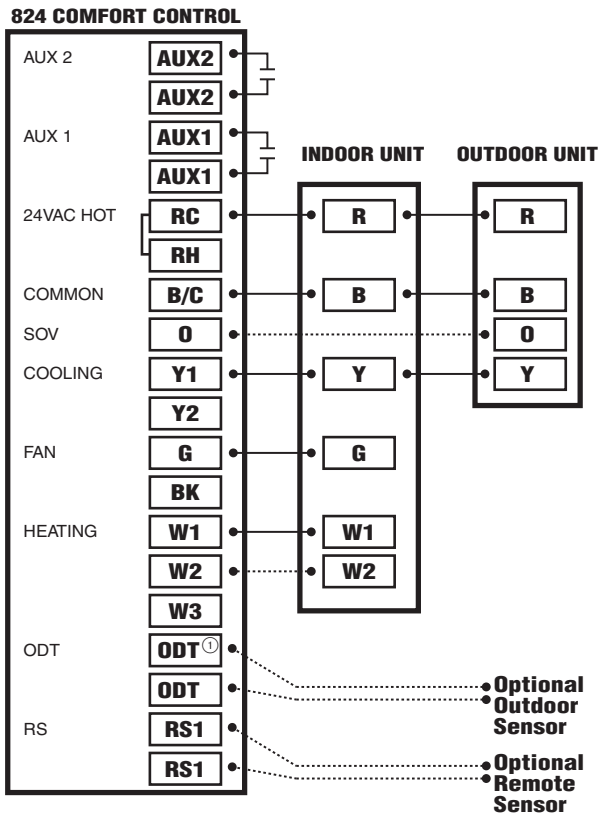
**Diagram 23 - 1 or 2 Stage Heat Pump w/Variable Speed Gas Furnace**



**NOTES:**

1. Cut and remove the factory installed "BK" jumper at the indoor unit
2. "BK" is not connected on non-Trane/American Standard units
3. "Y1" & "Y2" must be connected at the indoor unit on non-Trane/American Standard units
4. For restricted mode operation, a wired ODT sensor must be connected to the 824

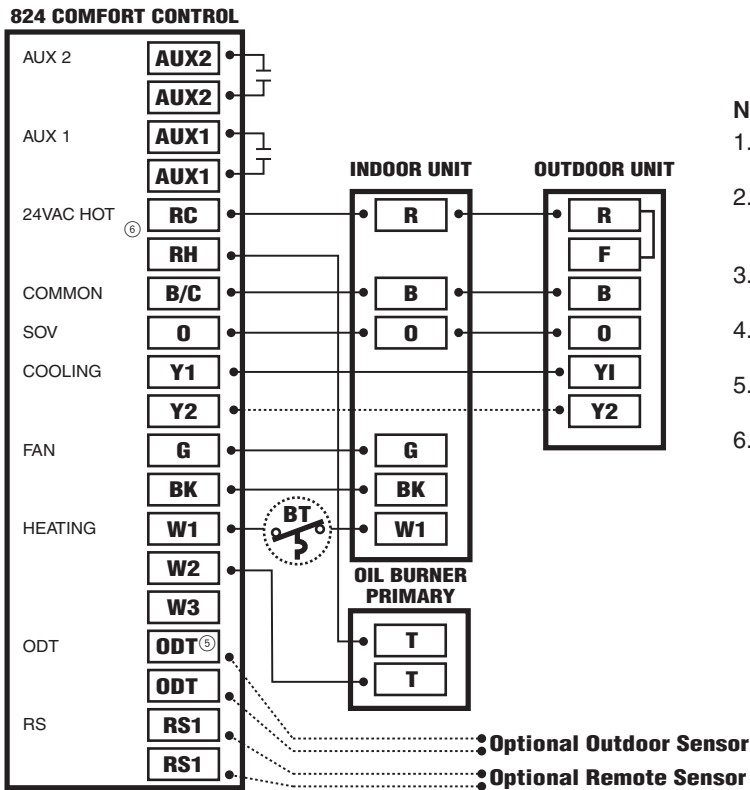
**Diagram 24 - 1 Stage Heat Pump w/Non-Variable Speed Gas Furnace**



**NOTES:**

1. For restricted mode operation, a wired ODT sensor must be connected to the 824

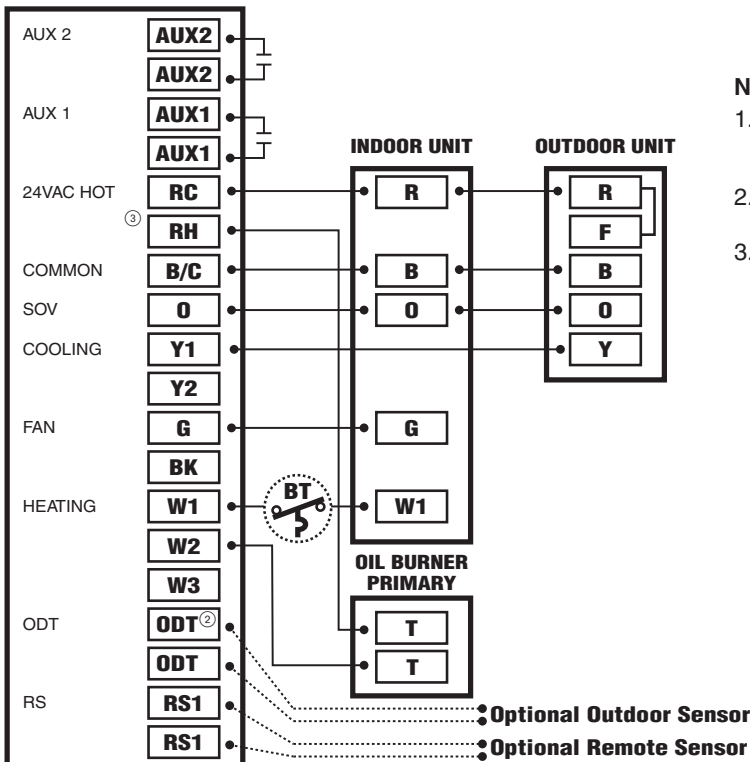
**Diagram 25 - 1 or 2 Stage Heat Pump w/Variable Speed Oil Furnace**



**NOTES:**

1. Cut and remove the factory installed "BK" jumper at the indoor unit
2. BT (Bonnet Thermostat) model THT1248 (BAYSEN03ATEMPAA) is required for dual fuel, oil furnace applications
3. "BK" is not connected on non-Trane/American Standard units
4. "Y1" & "Y2" must be connected at the indoor unit on non-Trane/American Standard units
5. For restricted mode operation, a wired ODT sensor must be connected to the 824
6. Remove factory RC/RH jumper for systems with separate heating and cooling low voltage transformers

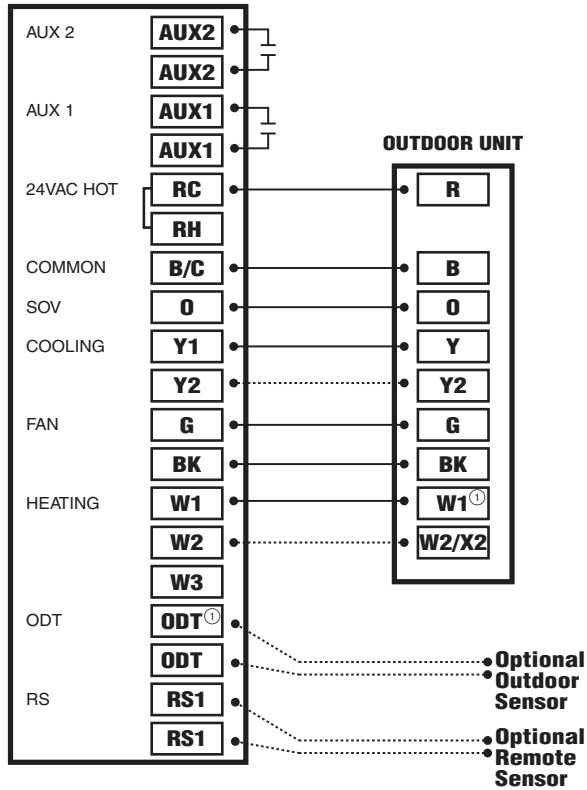
**Diagram 26 - Single Stage Heat Pump w/Non-Variable Speed Oil Furnace**



**NOTES:**

1. BT (Bonnet Thermostat) model THT1248 (BAYSEN03ATEMPAA) is required for dual fuel, oil furnace applications
2. For restricted mode operation, a wired ODT sensor must be connected to the 824
3. Remove factory RC/RH jumper for systems with separate heating and cooling low voltage transformers

**Diagram 27 - Package Single or Multi-Stage Dual Fuel w/Variable Speed Blower**



**NOTES:**

1. Cut and remove the factory installed "BK" jumper on them ECM fan control board
2. "BK" is not connected on non-Trane/American Standard units
3. For restricted mode operation, a wired ODT sensor must be connected to the 824

## 5. System Setup

### 5.1 Power-Up Sequence

When the 824 Control is connected to the Sub-base, the Control will initiate a 90-120 second power-up sequence. During the power-up sequence, the Screen Calibration option is available for five seconds. If the screen is not pressed within five seconds, the Control will default to previously stored Screen Calibration settings.

Note: The 824 Control is factory calibrated and can be recalibrated at any time by rebooting the Control and selecting Screen Calibration option within the five seconds following power-up.

## 5.2 Guided System Configuration Tool

The Guided System Configuration Tool walks you step by step through the configuration process. The Tool appears when the 824 is powered on for the first time and when the Restore Factory Defaults function is invoked.

After each step, a progress screen will show what steps have been completed and which ones are still pending.

MENU ITEM	DESCRIPTION
Time and Date [User]	Set the current time, date and time zone.
Installer Setup	From the Installer Setup screen, select a preset that matches the system's configuration (i.e. Single Stage AC, Standard Heat Pump, Multi-Stage Heat Pump, Standard Dual fuel, etc.). Based on this selection, the 824 automatically sets a number of parameters and options. Subsequent screens provide details of the settings and allow for manual editing of each parameter.
Service Reminders	Set the mode and frequency of Air Filter, ERV Service and System Maintenance Reminders. When a reminder is triggered, an alert will appear on the 824 Home Screen notifying the homeowner to contact their dealer for service.
Schedule [User]	
Guided Scheduling [User]	
Screen [User]	
Wireless Network [User]	
Dealer Code	
Registration [User]	
Weather [User]	

[User] indicates menu items that are included in the User Setup Tool.

## 5.3 Installer Setup

### 5.3.1 Group 1 Standard Settings

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Outdoor Unit Type	None, [Cooling Only], HP	Select the type of outdoor unit installed
Outdoor Unit Stages	[Single Stage], Two Stage	Select the number of outdoor unit stages
Compressor Type	Single Compressor Two Stage, [Two Compressor Two Stage]	Select the compressor type for multi-stage outdoor units
Indoor Unit Type	[Gas/Oil], Electric, Hydronic	Select the type of indoor unit installed
Indoor Heat Stages	[Single Stage], Two Stage, Three Stage	Select the number of indoor heat stages
Indoor Blower Type	Variable, [Non - Variable]	Select the indoor blower type (Constant Torque motors are considered non-variable speed)
Reversing Valve		

### 5.3.2 Group 2 Equipment Settings

MENU ITEM	OPTIONS [DEAFULT]	DESCRIPTION
Compressor Cooling Cycles Per Hour	2 - 6 [3]	Select the number of cycles per hour during cooling operation
1st Stage Compressor Cooling Cycles Per Hour	2 - 6 [3]	Select the number of cycles per hour during 1st stage cooling operation
2nd Stage Compressor Cooling Cycles Per Hour	2 - 6 [3]	Select the number of cycles per hour during 2nd stage cooling operation
Compressor Heating Cycles Per Hour	2 - 6 [3]	Select the minimum runtime (MRT) of stage 1 indoor heat
1st Stage Compressor Heating Cycles Per Hour	2 - 6 [3]	Select the minimum runtime (MRT) of stage 2 indoor heat
2nd Stage Compressor heating Cycles Per Hour	2 - 6 [5]	Select the minimum offtime (MOT) for indoor heat operation
Indoor Heater Cycles Per Hour	2 - 6 [5]	Select the number of cycles per hour during indoor heat operation
1st Stage Indoor Heat Cycles Per Hour	2 - 6 [5]	Select the number of cycles per hour during 1st stage indoor heat operation
2nd Stage Indoor Heat Cycles Per Hour	2 - 6 [5]	Select the number of cycles per hour during 2nd stage indoor heat operation
3rd Stage Indoor Heat Cycles Per Hour	2 - 6 [5]	Select the number of cycles per hour during 3rd stage indoor heat operation

### 5.3.3 Group 3 Sensors Settings

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Select Outdoor Temperature Sensor	[No ODT Sensor], Thermostat ODT Sensor	Select whether an outdoor temperature sensor has been connected
Calibrate Outdoor Temperature Sensor	-5°F - 5°F	Calibrate the outdoor temperature sensor
Select Indoor Temperature Sensor	[Thermostat IDT Sensor] Wired IDT Sensor	Select whether the indoor temperature is being sensed by the thermostat onboard sensor or wired remote sensor
Calibrate Indoor Temperature Sensor	-5°F - 5°F	Calibrate the indoor temperature sensor
Calibrate Onboard Humidity Sensor	-5% - 5%	Calibrate the onboard humidity sensor
Thermostat Humidity Sensor	[Disable], Enable	Select whether to use the onboard humidity sensor when a wired indoor remote temperature sensor is being used

### 5.3.4 Group 4 Accessories Settings

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Filtration Type Installed	Air Cleaner, [Media Filter]	Select the filter type installed
Humidifier Installed	[None], Yes	Select whether a humidifier is installed
Humidifier - Select Relay Panel Aux Contact	[Aux 1], Aux 2	Select which set of Aux contacts is connected to the humidifier
Humidifier Type	[Powered/Bypass], Steam	Select what type of humidifier is installed
Humidifier Control	[RH Control], Frost Control	Select how the humidifier will be controlled (Outdoor temperature sensor must be connected and enabled to allow this setting to be selected)
Humidifier Fan Action	[Humidify with Active Heat Call], Humidify without Active Heat Call	Select when the humidifier is allowed to operate (Humidification is disallowed during cooling mode or when the System Mode is Auto but the last call was cooling)
Airflow During Humidifier Only Mode	35% - 100% [50%]	Select the desired airflow when the humidifier is operating without an active call for heat
UV Light Installed	[None], Yes	Select whether a UV Light is installed
Dehumidifier Installed	[None], Yes	Select whether a ventilation system is installed
Dehumidifier - Select Relay Panel Aux Contact	Aux 1, [Aux 2]	Select which set of aux contacts is controlling the ventilation system
Dehumidifier Control Options	[Stand Alone Operation], With Active Call for Cooling Only	
Run System Fan with Dehumidifier Request	Yes, [No]	
Outdoor Temperature Ventilation Override	[Disable], Enable	Select whether an outdoor temperature override is allowed (Outdoor temperature sensor must be connected and enabled to allow this setting to be selected)
Ventilation - Minimum Outdoor Temperature	*-10°F - 50°F [0°]	Select the minimum outdoor temperature that ventilation is allowed
Ventilation - Maximum Outdoor Temperature	80°F - 110°F [100°F]	Select the maximum outdoor temperature that ventilation is allowed
Minimum Ventilation Runtime	0 - 60 Minutes [5 Minutes]	Select the minimum runtime per hour for ventilation system
Acculate Overridden Runtime	[No], Yes	Select whether the overridden ventilation runtime will be made up
Acculate Period	[4 hours -recover only when outdoor conditions are favorable], 24 hours - recover only when outdoor conditions are favorable, 4 hours - recover as need to meet minimum, 24 hours - recover as needed to meet minimum	Select when to recover missed ventilation runtime due to outdoor conditions exceeding the minimum/maximum outdoor temperature for ventilation (The first two options will not meet AHRAE 62.2 standard for minimum ventilation requirements)

### 5.3.5 Group 5 Comfort Settings

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Enable Dehumidification	[Enable], Disable	When dehumidification is enabled, the control will reduce system airflow by 30% (variable speed indoor units only) anytime the indoor humidity is higher than the cooling target humidity setpoint and the indoor temperature is within 2°F of cooling setpoint. All fan off delays will also be cancelled.
Dehumidification Overcooling Limit - Degrees	[0°] - 3°F	Select the maximum amount of overcooling allowed when the indoor humidity exceeds the cooling target humidity setpoint. To accomplish the overcooling the control will artificially create additional load by increasing the sensed indoor temperature by 1/10th of a degree for every 1% of a percent of humidity error, up to the overcooling limit selected. The displayed indoor temperature will remain the same, but the adjusted indoor temperature will control cooling operation.
Control Response Rate	[Normal], Fast	Select how quickly the control builds load value (Selecting Fast will cause the control to build load value faster than normal operation)
Aggressive Recovery > 2° Setpoint Change	Enable, [Disable]	Select whether the 10-minute staging inhibit is disabled (heating or cooling mode) with a setpoint change greater than 2°F (Change can be manual or scheduled)
Heating Aggressive Recovery	Enable, [Disable]	Select whether the 10-minute staging inhibit is disabled during heating mode when the outdoor temperature falls below the selected outdoor temperature (Outdoor temperature sensor must be connected and enabled to allow this setting to be selected)
Warm Air Discharge	Enable, [Disable]	When enabled the indoor blower speed will be limited to 80% on a call for heat pump heating. This only applies to heat pump heating with no call for aux heat (An indoor unit with variable speed blower is required)



### 5.3.6 Group 6 Airflow Settings

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Variable Speed Blower On Delay - Cooling	[No Delay], 1 Minute @ 50%; 7.5 Minutes @ 80%, 1 Minute @ 50%; 4 Minutes @ 80%, 7.5 Minutes @ 80%, 4 Minutes @ 80%, 1 Minute @ 50%, 30 Seconds	Select the blower on delay for cooling operation
Non Variable Speed Blower On Delay - Cooling	[No Delay], 15 Seconds, 30 Seconds	Select the blower on delay for cooling operation
Variable Speed Blower Off Delay - Cooling	[No Delay], 1.5 Minutes @ 100%, 45 Seconds @ 100%, 30 Seconds @ 50%, 1.5 Minutes @ 50%, 3 Minutes @ 50%, 30 Seconds @ 35%	Select the blower off delay for cooling operation
Non Variable Speed Blower Off Delay - Cooling	[No Delay], 30 Seconds, 60 Seconds, 90 Seconds	Select the blower off delay for cooling operation
Variable Speed Blower On Delay - Compressor Heating	[No Delay], 1 Minute @ 50%; 7.5 Minutes @ 80%, 1 Minute @ 50%; 4 Minutes @ 80%, 7.5 Minutes @ 80%, 4 Minutes @ 80%, 1 Minute @ 50%, 30 Seconds	Select the blower on delay for compressor heating operation
Non Variable Speed Blower On Delay - Compressor Heating	[No Delay], 15 Seconds, 30 Seconds	Select the blower on delay for compressor heating operation
Variable Speed Blower Off Delay - Compressor Heating	[No Delay], 1.5 Minutes @ 100%, 45 Seconds @ 100%, 30 Seconds @ 50%, 1.5 Minutes @ 50%, 3 Minutes @ 50%, 30 Seconds @ 35%	Select the blower off delay for compressor heating operation
Non Variable Speed Blower Off Delay - Compressor Heating	[No Delay], 30 Seconds, 60 Seconds, 90 Seconds	Select the blower off delay for compressor heating operation
Hydronic Heat Blower On Delay	[No Delay], 30 Seconds, 60 Seconds	Select the blower on delay for hydronic heating operation
Hydronic Heat Blower Off Delay	[No Delay], 30 Seconds, 60 Seconds, 90 Seconds	Select the blower off delay for hydronic heating operation
Compressor Low Stage Air Flow% - Compressor Cooling	35% - 60% [50%]	Select the 1st stage air flow for a two stage/two compressor unit in cooling mode
Compressor Low Stage Air Flow% - Compressor Cooling	55% - [80%]	Select the 1st stage air flow for a two stage/single compressor unit in cooling mode
Compressor Low Stage Air Flow% - Compressor Heating	35% - 60% [50%]	Select the 1st stage air flow for a two stage/two compressor unit in heating mode
Compressor Low Stage Air Flow% - Compressor Heating	55% - [80%]	Select the 1st stage air flow for a two stage/single compressor unit in heating mode

### 5.3.7 Advanced Settings — Lockouts

MENU ITEM	OPTIONS [DEFAULT]	DESCRIPTION
Auxiliary Heat Lockout	[Disable], Enable	Enable auxiliary heat lockout (10° minimum separation when enabling auxiliary heat lockout and compressor heat lockout)
Auxiliary Heat Lockout	32°F - 70°F Degrees [45°]	Select an outdoor temperature to prevent auxiliary heat above the selected outdoor temperature
Compressor Lockout	[Disable], Enable	Enable compressor heat lockout (10° minimum separation when enabling auxiliary heat lockout and compressor heat lockout)
Compressor Lockout	5°F - 35°F Degrees [30]	Select an outdoor temperature to prevent compressor heating below the selected outdoor temperature
Defrost Heater Balance Point (W1)	[Disable], Enable	Enable defrost heater balance point for W1, W2 and W3 (only applicable when indoor heat is electric or hydronic)
Defrost Heater Balance Point (W1)	40°F - [55°F]	Select an outdoor temperature to disallow 1st, 2nd and 3rd stage of indoor heat during defrost above this temperature
Defrost Heater Balance Point (W2)	[Disable], Enable	Enable defrost heater balance point for W1 and W2 (only applicable when indoor heat is electric or hydronic)
Defrost Heater Balance Point (W2)	10°F - 50°F [55°F]	Select an outdoor temperature to disallow 2nd and 3rd stage of indoor heat during defrost above this temperature
Defrost Heater Balance Point (W3)	[Disable], Enable	Enable defrost heater balance point for W3 only (only applicable when indoor heat is electric or hydronic)
Defrost Heater Balance Point (W3)	[5°F] - 35°F	Select an outdoor temperature to disallow 3rd stage of indoor heat during defrost above this temperature
Compressor Cooling 1st Stage Lockout	[Disable], Enable	Enable compressor cooling 1st stage lockout
Compressor Cooling 1st Stage Lockout	80°F - [120°F]	Select an outdoor temperature to force the system to 2nd stage compressor cooling
Compressor Heating 1st Stage Lockout	[Disable], Enable	Enable compressor heating 1st stage lockout
Compressor Heating 1st Stage Lockout	0°F - [50°F]	Select an outdoor temperature to force the system to 2nd stage compressor heating
Furnace Heating 1st Stage Lockout	[Disable], Enable	Enable furnace heating 1st stage lockout
Furnace Heating 1st Stage Lockout	0°F - [50°F]	Select an outdoor temperature to force the system to 2nd stage furnace heating

## 5.4 Reminders

## 5.5 Dealer Code





## 6. Basic Operation

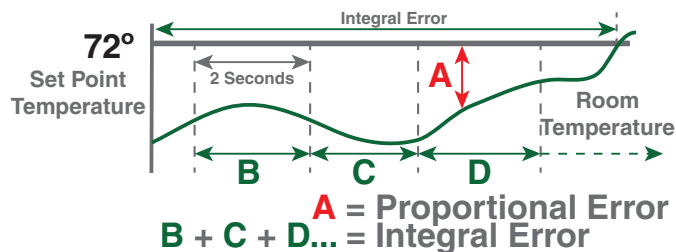
### 6.1 PI Control

The 824 Control uses Trane's proprietary control schemes to provide both comfort and energy efficiency. The Control samples the indoor temperature every five seconds and determines the capacity needed based on the following parameters:

- Mode of operation
- Proportional Error - distance from set point
- Integral Error - Time away from set point

### 6.2 Load Value

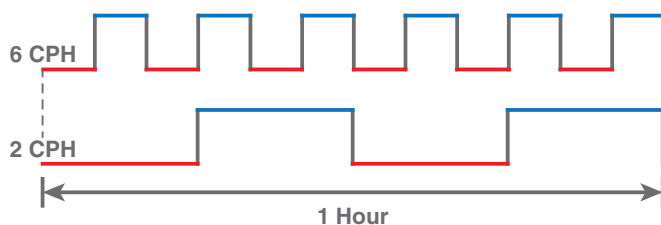
The 824 uses Proportional Error plus Integral Error to determine the amount of capacity required. The calculated capacity is displayed as Load Value. Load Value is a numerical representation of the needed capacity to maintain the desired set point. The Load Value range is dependent on the applied system.



### 6.3 Duty Cycles

Indoor temperature control is achieved by duty cycling the equipment when the load value is less than 100% of the current stage of operation. The duty cycle rate is dependent on the calculated load value.

The duty cycle chart below indicates the number of cycles at 50% load (i.e. LV = 50).



As with all PI-based controls the indoor temperature will fluctuate above and below the user selected set point to maintain comfort in the space. Adjusting the factory set CPH (Cycles per Hour) can affect how tight the control operates around the set point. The CPH can be adjusted in the Installer Settings>Advanced>Equipment (2 – 6 CPH)

- Factory default for compressor operation is 3 CPH
- Factory default for indoor heat is 5 CPH

#### Effects of changing the cycle rates

Lower CPH results in longer run cycles with less cycling but the indoor temperature may deviate above and below set point.

Higher CPH results in higher indoor temperature control but shorter, more frequent cycles.

### 6.4 Overshoot Clamp

The 824 Control will enforce an "off cycle" anytime the control overshoots more than 2.5°F. Once the indoor temperature is within .75°F of set point an "on cycle" is allowed dependent on load value and minimum off times.

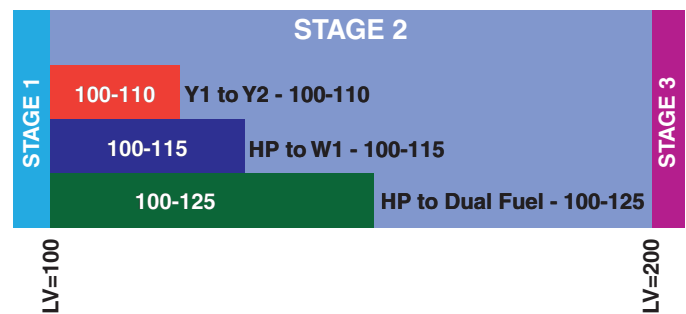
Show illustration...

### 6.5 Stage Thresholds

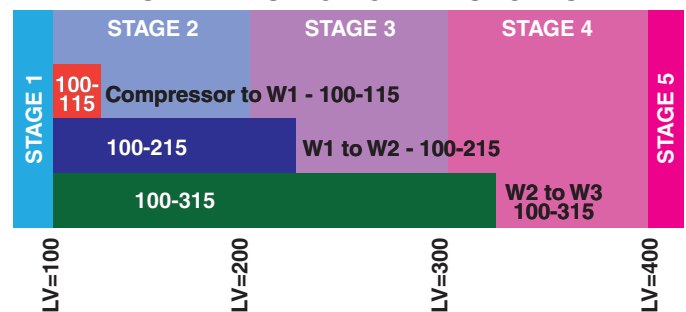
The threshold to allow operation is a Load Value greater than 5 and operation is always terminated with a Load Value less than 1.

Load Value also determines when additional stages of operation are requested. To prevent rapid cycling between stages, a stage threshold is enforced. The stage threshold is dependent on the applied system.

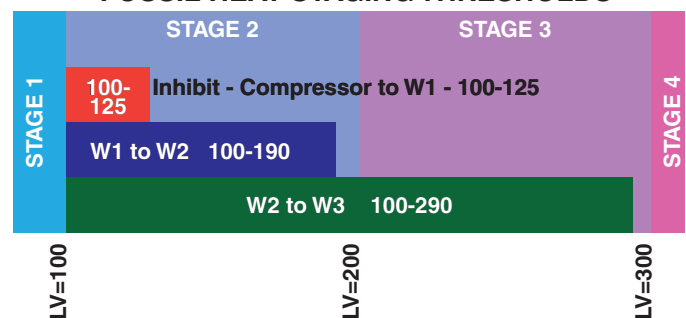
#### COMPRESSOR STAGING THRESHOLDS



#### AUX HEAT STAGING THRESHOLDS



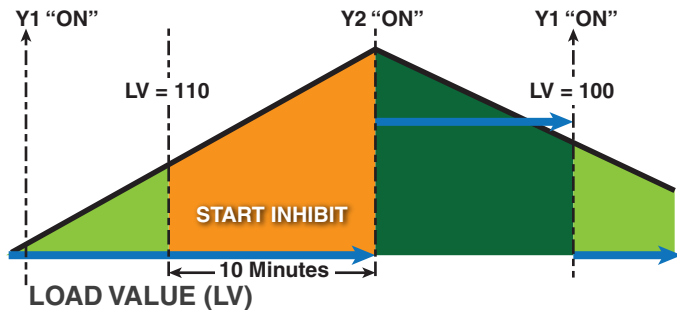
#### FOSSIL HEAT STAGING THRESHOLDS



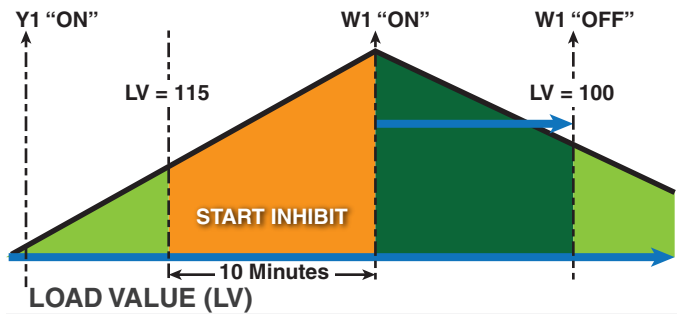
### 6.6 Stage Inhibits

When the stage threshold is exceeded, a stage inhibit is applied. The stage inhibit calculates the rate of recovery over a 10-minute period and determines if the next stage is required to meet the current demand. If the rate of recovery is great enough, then a new 10-minute inhibit is enabled. The Control will not go to the next stage of operation until it determines that the current stage cannot satisfy the current demand. Stage inhibits only apply between compressor stages and compressor heat to indoor heat. Stage inhibits do not apply to indoor heat stages.

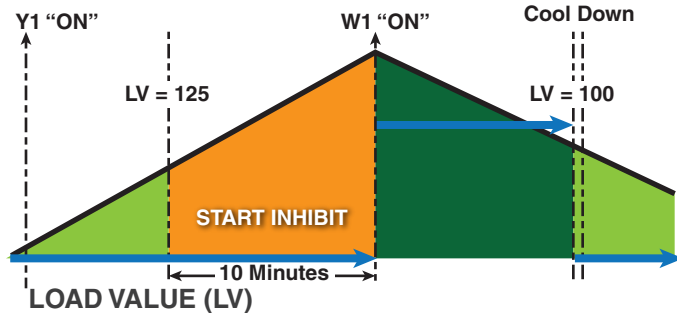
#### Stage Inhibits - Compressor Staging



#### Stage Inhibits - Compressor to Aux Heat



#### Stage Inhibits - Duel Fuel



Stage inhibits can be disabled in the 824 Control Installer Settings>Advanced>Comfort. Options are below:

### 6.7 Aggressive Recovery

- Disables stage inhibits in heating and cooling mode anytime the set point is adjusted more than 2°F
- Heating Aggressive Recovery
- Disable stage inhibit in heating mode only when the

outdoor temperature falls below the selected outdoor temperature

### 6.8 System Mode

- The 824 has (5) System Modes which can be selected...Heating, Cooling, Off, Emergency Heating and Auto.
- Heating – System will only operate in heating mode
- Cooling – System will only operate in the cooling mode
- Off – System will not operate in heating or cooling mode
- Emergency Heating – System will operate the indoor heat source only (this is only available when the outdoor unit type is a heat pump)
- Auto - The control will determine which mode of operation by the following rules:
- Heat - Indoor temperature is equal or less than heating set point
- Cooling – Indoor temperature is within 1°F of cooling set point

There is minimum deadband between heating and cooling set points of 4°F

### 6.9 Fan Mode

The 824 has three Fan Modes:

- Auto – Fan only runs with a call for heating or cooling
- On – Fan runs continuous
- Circ – Fan runs a user selected minimum amount of time each hour

### 6.10 Air Cleaner Mode

The 824 has three Air Cleaner modes:

- Auto – Air cleaner operates only with a call for fan operation
- Quick – Air cleaner will operate for 3-hours
- Allergy – Air cleaner will operate for 24-hours

## 7. Advanced Operation

### 7.1 Dehumidification

The 824 utilizes the following methods for dehumidification:

- Air flow reduction – If the indoor unit has a variable speed blower the 824 Control can reduce the system air flow by 30% anytime the indoor RH is higher than the cooling RH target. Air flow reduction is disallowed if the indoor temperature is more than 2°F away from the cooling set point. Dehumidification is enabled by default and can be disabled by navigating to Installer Settings>Advanced>Comfort settings.
- “Fan Off” delays are defeated when dehumidification is enabled and the indoor RH exceeds the cooling RH target.
- Cooling Overshoot - If cooling overshoot is enabled, the Control will allow a .1°F of overcooling for each 1% of RH error. When the system is actively overcooling, Dehumidification will be displayed on the 824 home screen. A maximum amount of overcooling can be configured for 1°F, 2°F or 3°F. Overcooling is enabled in Installer Settings>Advanced>Comfort settings.
- Smart Continuous Fan – If this option is enabled, continuous fan operation will be interrupted when indoor RH exceeds desired cooling RH target. A humidity icon will be displayed along with the fan icon to indicate that continuous fan operation has been disabled due to high humidity conditions. Smart Continuous Fan will not interrupt the fan circulate mode. To enable this function press Menu>Fan>Smart Continuous Fan settings.

### 7.2 Warm Air Discharge

Enabling Warm Air Discharge will reduce the variable speed blower air flow by 20% when in compressor heating operation. Warm air discharge only applies to compressor heating and is disabled when hydronic, fossil fuel or electrical heat (including supplement heat) modes are activated. Warm Air Discharge can be enabled in Installer Settings>Advanced>Comfort settings.

### 7.3 Lockouts

### 7.4 Control Response Rate

### 7.5 Aux Contacts

The 824 has two sets of dry contacts which can be configured to control a Humidifier, Ventilation system or a Whole-House Dehumidifier.

### 7.6 Stand Alone Operation

Dehumidifier can operate independent from cooling operation as long as the control is Cooling or Auto mode and the last call was cooling.

If Stand Alone Operation is selected, the control allows the user to select whether the indoor fan operates with dehumidifier request.

With Active Call for Cooling Only – Dehumidifier can only operate during an active call for cooling.

## 8. Diagnostic Tools

### 8.1 Test Modes.

MODE	SETTINGS	DESCRIPTION
Test Blower	50%, 100%	Energize indoor blower at the selected speed
Test Cool	Stage 1 Stage 2	Energize the selected stage of cooling operation. The indoor blower will also operate at the speed required for the selected stage
Test Compressor Heat	Stage 1 Stage 2	Energize the selected stage of compressor heating operation. The indoor blower will also operate at the speed required for the selected stage
Test Indoor Heat	Stage 1 Stage 2 Stage 3 Modulating	Energize the selected stage of indoor heating operation. The blower operation will be dependent on the indoor heat type: Electric - blower energized during test mode but the blower speed is controlled by the indoor unit Fossil - blower is controlled independently by the indoor unit during test mode Hydronic - blower is energized during test mode
Test Compressor and Indoor Heat	Stage 1 Indoor Heat Stage 2 Indoor Heat Stage 3 Indoor Heat	Energize all stages of compressor heat and selected stage of indoor electric heat/hydronic heat. The blower is energized and runs at the higher of the compressor heat air flow versus indoor heat air flow
More	Test Humidifier Test Aux Contact	Closes the normally open Humidifier/AUX contacts. The blower is not energized during this test mode

### 8.2 Data Logging

The 824 Control has the ability to log data on USB Flash Drive. Attach a USB Flash Drive to the Standard-A receptacle of the included Micro-A to Standard-A adapter and plug the Micro-A end into the Micro-USB plug on the 824 Control and select Save Logs from the Service Menu.

The amount of data logged will be dependent on the number of days logged and the storage capability of the USB Flash Drive.

HOW TO END???

### 8.3 Diagnostics

Within the Diagnostic screen are two items related to alerts:

- Current Alerts – Alerts which are currently active
- Alert History – Alerts which have been cleared (last 30 days)

NOTE: Each alert will have a date/timestamp of when the alert was negated.

From both screens the user can select an alert code and get additional information on the alert as well as a list of possible causes, similar to the Interactive Troubleshooting Guide located on ComfortSite/ASDealernet

All alerts are categorized by severity:

- **CRITICAL**
  - Loss of heating/cooling operation
  - Service call is required
  - Alert messages are displayed on the home screen and when closed, a flashing red icon is used to indicate alert condition.

- **MAJOR**

- Reduced functionality but basic/minimum operation is possible
- Service call is not immediately required
- Alert messages are not displayed on the home screen but a yellow icon is used to indicate alert condition.

NOTE: Critical and Major alerts can be displayed on the home screen by pressing the alert icon on the shortcut toolbar (top right of home screen).

- **NORMAL**

- Functionality may be lost but should recover or information used for diagnostic purposes / performance monitoring
- Service call is not required
- Normal alerts are only displayed in the Diagnostic screen

### 8.4 History

The History screen allows the technician to view cycle count and run time data for each mode and stage of operation. This data provides a snap-shot in to how the system is operating. The technician can also compare the current month versus the previous month.



Feature	Description
1-Touch Presets	The 1-Touch Presets allows for an immediate change to the setpoint status. Set the desired temperature for the three status modes (Home, Away & Sleep). The control will remain in the selected mode until another mode is selected or the program reaches a new schedule period.
Aggressive Recovery	<p><b>Aggressive Recovery:</b> This option disables the 10 minute inhibit anytime the control sees more than a 2° change (such as moving from one program time frame to another). This applies to heating &amp; cooling modes.</p> <p><b>Heating Aggressive Recovery:</b> This option disables the 10 minute inhibit based on outdoor temperature in heating mode only. The value for outdoor temperature can be set from 0°–70°.</p> <p><b>Heating Aggressive Recovery can only be enabled if Aggressive Recovery is disabled.</b></p> <p>There is a 10 minute “inhibit” period between first and second stage compressor as well as compressor heating &amp; auxiliary heating. This 10 minute inhibit period minimizes the cycling of higher capacity when the existing capacity is sufficient to meet the demand.</p>
Air Cleaner Mode	<p>There are three options when setting the Air Cleaner Mode:</p> <p>Auto--the air cleaner will run whenever the blower is running.</p> <p>Quick Clean--the control will energize the air cleaner at 100% output and blower at 100% air flow for a 3-hour run cycle.</p> <p>Allergy Clean--the control will energize the air cleaner at 100% output and blower at 100% air flow for a 24-hour cycle.</p>
Alert Indication	<p>System alerts will be indicated on the home screen of the control with two options: “Close” or “Dealer Contact Information”.</p> <ul style="list-style-type: none"> <li>• Selecting “Dealer Contact Information” will display the dealer screen.</li> <li>• Selecting the “Close” option will move the alert to the top right corner of the home screen. Pressing the icon button in the top right corner of the screen will recall the alert to the home screen.</li> </ul> <p>All alerts will remain until resolved.</p> <p><b>Critical Alert</b> – indicates the loss of heating or cooling operation. Only critical alerts will be displayed on the home screen. These alerts will flash red when “closed” and moved to the top right corner of the control.</p> <p><b>Major Alerts</b> – indicates the loss of system functionality, but the system is still operational. Major alerts will be displayed as a solid yellow icon in the upper right corner of the control.</p>
Blower On / Off Delays	Blower on / off profiles can be set independently for heating and cooling modes. There are blower delays specific for variable speed, non variable speed and hydronic heat applications.
Calibration	The sensors (indoor, remote and outdoor) can be individually calibrated for temperature and humidity. The <b>indoor</b> sensors may be calibrated to plus or minus 5° or 5% in increments of 1 . The <b>outdoor</b> sensor may be calibrated to plus or minus 10° in 1° increments.
Control Response Rate	This feature changes the response rate of the control. Selecting a “faster” response rate will maintain a tighter tolerance of indoor temperatures, but increases the cycling of the system.
Cycle Rate	<p>The cycle rate affects the cycle time of the system. With a 50% load value, a cycle rate of 3 will allow the system to run for 10 minutes and be off for 10 minutes; completing 3 cycles in one hour. A cycle rate of 5 would allow the system to cycle on and off at 6 minute intervals. The higher the cycle rate, the more often the system turns on and off.</p> <p>The actual amount of time the system will be “on” or “off” will be reflective in the load value of the home. Higher load value demands will increase system run time and decrease system off time. Lower load value demands will decrease system run time and increase system off time.</p>
Dealer Information	Dealer contact information, including name, address, website and multiple phone numbers may be entered. In addition, a dealer logo (which must be named dealer.jpg) can be uploaded through the use of an SD card. File size should not exceed 3 MB. With software version 2.1 and above, a Dealer Code has been added. By simply typing in the dealer’s main phone number, all required fields will be auto-populated.

Feature	Description
Duty Cycle	When the control is requesting less capacity than the system can deliver, the control will duty cycle to meet the required demand. The length and frequency of each duty cycle is based on the cycle rate and current load value.
Dehumidification	<p><b>There are two requirements before dehumidification is enabled:</b></p> <ul style="list-style-type: none"> <li>• Dehumidification must be enabled through the Installer Setup.</li> <li>• The indoor relative humidity must be above the desired setpoint.</li> </ul> <p><b>The system will take the following actions once this condition is met:</b></p> <ul style="list-style-type: none"> <li>• The blower will reduce air flow proportional to the amount of RH error. The control evaluates the percentage of humidity error and how long the error has existed to determine the amount of air flow reduction, up to 30% reduction.</li> <li>• If overcooling is enabled, the control will engage a 1 degree of overcooling for each 10% of RH error. A maximum amount of overcooling can be configured to 1, 2 or 3 degrees.</li> <li>• Fan off delays will be eliminated.</li> </ul> <p><b>Smart Continuous Fan</b></p> <p>Continuous fan operation will be interrupted when indoor relative humidity exceeds desired humidity setpoint. A humidity icon will be displayed along with the fan icon to indicate that blower on options have been disabled due to high humidity conditions. Smart Continuous Fan will not interrupt the fan circulate mode.</p>
Alert Code Diagnostics	Diagnostics are displayed as current alerts (what is currently happening in the system) and alert history (what has occurred in the past, but are no longer present). The alert screen describes the alert, when the alert happened, the severity level of the alert as well as a problem description and possible causes to assist with troubleshooting. Up to the last 30 days are displayed.
Dual Fuel Options	<p>The change over from heat pump to furnace can be set based on three options:</p> <ul style="list-style-type: none"> <li>• <b>Comfort</b>—This is strictly based on indoor temperature demand. The furnace will take over when the heat pump can no longer maintain the indoor heating demand.</li> <li>• <b>Operating Cost</b>—The HSPF of the heat pump and AFUE of the furnace must be entered along with cost of electricity and fuel. The control calculates an economic balance point for system change over.</li> <li>• <b>Outdoor Temperature</b>—The changeover from heat pump to furnace is based on outdoor temperature which can be set from 0–70° (thermal balance point).</li> </ul> <p><b>The furnace will take over anytime the HP is unable to maintain indoor temperature, regardless of the dual fuel option chosen.</b></p>
Emergency Heat	The heat pump will be disabled and the furnace / heat strips are enabled any time the control is set to Emergency Heat.
Fan Options	<p>There are three options available for blower operation:</p> <ul style="list-style-type: none"> <li>• <b>Auto</b>—the blower runs when there is a call for cooling or heating.</li> <li>• <b>On</b>—the blower will run continually with a fan only call. The continuous fan speed for variable speed motors can be adjusted from 35%–100%. A call for heating or cooling will supersede a fan only call and the blower will run at a speed that matches the staging of the equipment.</li> <li>• <b>Circulate</b>—this provides all the features of “fan on”, but the blower will only run a percentage of the time when there is no call for heating or cooling. The blower can be set to circulate from 10–55 minutes of every hour.</li> </ul>
History Screen	The History Screen provides system cycle information. Cycle counts and run time can be viewed for first stage and second stage compressor operation, W1, W2 & W3 heating and defrost cycles. This information can be viewed in a 24 hour, 1 week or 1 month period.

Feature	Description
Humidification	<p>There are two options available for humidification:</p> <ul style="list-style-type: none"> <li>• <b>Indoor RH setpoint</b>—this controls the humidifier based on the desired indoor humidity setpoint (options from 10%–45%).</li> <li>• <b>Frost Control setpoint</b>--The control references the outdoor temperature and indoor environment to calculate the risk of frost or condensation on interior walls and windows. A scale of 0 to 10 allows for customized settings based on the insulation properties of the home. A higher number may be selected for well insulated homes, whereas a lower number should be selected on poorly insulated homes. A lower number should be utilized if condensation is observed.</li> </ul> <p>There are two control options for enabling humidification:</p> <ul style="list-style-type: none"> <li>• Humidification with an active call for heat.</li> <li>• Humidification without an active call for heat (control energizes blower and humidifier). <ul style="list-style-type: none"> <li>• Blower speed can be adjusted when there is no active call for heat but a call for humidification is present</li> </ul> </li> </ul> <p><b>Humidification is only available when in the heating mode (or in the auto mode when the last call was for heating). A 60 second minimum blower off delay is enforced if “steam” humidification is selected.</b></p>
Installer Setup	<p>There are two categories for Installer Setup.</p> <ul style="list-style-type: none"> <li>• <b>Standard</b>—this is the basic system settings such as heat pump or cooling only, single or multi stage, compressor type, etc. This is the basic system set up that is self discovered in communicating mode, but requires manual input when using a Relay Panel for 24 volt configurations.</li> <li>• <b>Advanced</b>—this provides advanced configuration of the system such as cycles per hour, minimum run times, humidification and dehumidification setpoints, blower delays and temperature lockouts to name a few of the customizable features in this set up.</li> </ul>
Load Value	<p>Load Value is a numerical representation of the needed capacity to satisfy the setpoint. Proportional (distance from setpoint) error plus integral (time away from setpoint) error is used to calculate load value.</p>
Lockouts	<p>System lockouts will disable a certain function of the system under specific outdoor temperatures:</p> <ul style="list-style-type: none"> <li>• <b>Compressor Heating Lockout</b> – will lockout all compressor operation below a set outdoor temperature (from 5°–70°). This value must be set lower than the auxiliary heat lockout.</li> <li>• <b>Auxiliary Heating Lockout</b> – will lock out auxiliary heat stages above a set outdoor temperature (from 40°–70°). This value must be set higher than the compressor heating lockout.</li> <li>• <b>Defrost Heater Balance Point</b> for W1, W2 &amp; W3 – will lock out specific auxiliary heat stages when above a set outdoor temperature. (W1 setpoint is from 40°–55°, W2 &amp; W3 setpoints are from 5°–55°). This feature does not apply to dual fuel systems.</li> <li>• <b>Compressor Cooling First Stage Lockout</b> – will lock out the first stage compressor above a set outdoor temperature. (from 80°–120°)</li> <li>• <b>Compressor Heating First Stage Lockout</b> – will lock out the first stage compressor below a set outdoor temperature. (from 0°–50°)</li> <li>• <b>Furnace First Stage Heating Lockout</b> – will lock out first stage furnace operation below a set outdoor temperature. (from 15°–50°)</li> </ul> <p>First stage lockouts are not available with zoning.</p>
Reminder Screens	<p>Reminders can be set for filters, UV lamps, humidifier pads, and various other service reminders.</p>
Restore	<p>There are three levels of restore:</p> <ul style="list-style-type: none"> <li>• <b>Restore from the Setting Screen</b> – this restores all personal configurations, such as program schedules and home screen customization to their default setting.</li> <li>• <b>Reset Advanced Options from the Install Set Up screen</b> – this restores all the advanced set up selections such as system lockouts, accessories, air flow and comfort options to their default setting.</li> <li>• <b>Restore Factory Defaults</b> – this restores the control to its “out of the box” condition. All settings will be set to their factory default condition.</li> </ul>

Feature	Description
Security	<p>Security initiates a keypad lockout. The control can only be accessed by a four digit pass code which can be configured in two different formats:</p> <p>Pin Lock: When the Pin Lock is selected, the control is completely locked. The user will need to enter a four digit password to change any setting (the default is "1234").</p> <p>Guest mode: The enabling of this mode allows a guest to change the temperature up to 5° in either direction from setpoint and access to the weather, but cannot change the mode or any customized settings. Note: The back door password is 9467.</p>
Network Diagnostics	<p>Screen gives the user the ability to view the wireless connectivity of the 950 Control. Save Diagnostic Logs is used to record wireless data for troubleshooting purposes</p>
Setpoint Dead Band	<p>This sets the temperature band between heating and cooling setpoints while in the auto mode.</p>
Software Updates	<p>The control is field software upgradable. The software can be upgraded by two methods:</p> <p><b>USB Flash Drive upgrade</b> - Insert a USB Flash Drive with new software loaded and use the software upgrade screen to complete the upgrade process.</p> <p><b>Internet upgrade</b> - Use the software upgrade screen to complete the upgrade process</p>
System Report	<p>The System Report Screen provides a real time in depth look at operating conditions. While similar to the System Status screen, the system report adds additional information for service technicians.</p>
Test Mode	<p>There are three Test Modes in the control:</p> <p><b>System Test</b> - Ability to test heating/cooling/blower/humidifier and aux contacts for up to 30 minutes.</p> <p><b>Damper Test</b> - Ability to test damper operation (see Zone Panel IG for more information).</p> <p><b>Variable Speed Test</b> -</p>
Technician Access Screens	<p>The "Technician Access" icon has a 5 second hold delay to enter the technician service screens. After this 5 second hold delay, the technician will see a "Caution!" screen noting that only a trained HVAC technician should proceed into this area.</p>
Ventilation	<p>The 950 control has the ability to control a ventilation system through the AUX contacts of a Relay Panel (Model BAY24VRPAC52DB* or newer). This function is enabled in the Installer Setup &gt; Advanced &gt; Accessories &gt; Ventilation Installed. Once enabled the minimum ventilation can be set for each hour. Ventilation can be overridden during extreme temperature conditions by setting a maximum and minimum outdoor temperature for ventilation operation (wired outdoor sensor must be connected and enabled). Additional options are available to accumulate overridden runtime. All options are available for selection in Installer Setup &gt; Advanced &gt; Accessories section.</p> <p><b>Note:</b> Currently there is no option to interlock the blower with a call for ventilation.</p>
Warm Air Discharge	<p>Enabling Warm Air Discharge will reduce the variable speed blower air flow by 20% when in compressor heating operation. Warm air discharge only applies to compressor heating and is disabled when hydronic, fossil fuel or electrical heat (including supplement heat) modes are activated.</p>
Whole House Dehumidifier	<p>The 950 control has the ability to control a whole-house dehumidifier through the AUX contacts of a Relay Panel (Model BAY24VRPAC52DB* or newer). This function is enabled in the Installer Setup &gt; Advanced &gt; Accessories &gt; Dehumidifier Installed. The dehumidifier can be setup for stand-alone operation or only when the system is actively cooling. The user can also select whether the blower will be energized with a call for dehumidifier operation. Dehumidifier operation is only allowed in Cooling Mode or in Auto Mode when the last call for operation was cooling.</p>

## 9. Notices

### 9.1 FCC Notice

FCC ID

#### INFORMATION TO USER

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 undesired operation. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment has been tested and found to comply with the limits for Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### 9.2 IC Notice

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

La distance entre l'utilisateur et de produits ne devrait pas être inférieure à 20cm

## 9.3 Warranty

### Base Limited Warranty (GW-658-2913)

Subject to the terms and conditions of this limited warranty, Trane U.S., Inc. ("Company") extends a limited warranty against manufacturing defects for the product(s) identified in **Tables 1, 1A, 1B** attached hereto ("Products") that are installed in a residential/multi-family application (personal, family or household purposes) under normal use and maintenance in the United States and Canada.

**This limited warranty applies to Products manufactured on or after August 1, 2011.**

In order to maximize the available benefits under this limited warranty, the Purchaser (as defined below) should read it in its entirety. All repairs of Product parts covered under this limited warranty must be made with authorized service parts and by a licensed HVAC service provider. Additionally, commercial applications are treated differently under this limited warranty as stated in **Tables 1, 1A, 1B** attached hereto. For purposes of this limited warranty, "commercial applications" shall mean any application other than for personal, family, or household use.

**TERM:** The limited warranty period for Products is as stated in **Tables 1, 1A, 1B** attached hereto. If the Purchaser properly registers the Products, the limited warranty period shall be extended as stated in **Tables 1, 1A, 1B** attached hereto. Regardless of registration, the Commencement Date for a limited warranty period shall be the date that the original installation is complete and all Product start-up procedures have been properly completed and verified by an installer's invoice. If the installation and start-up date cannot be verified by the installer's invoice, the Commencement Date shall be sixty (60) days after the factory manufacture date which is verified by the Product serial number. Where a Product is installed in a newly constructed home, the Commencement Date is the date the Purchaser purchased the residence from the builder. Proof of Product purchase, installation, and/or closing date of the residence may be required to confirm the Commencement Date.

The installation of Product replacement parts under this limited warranty shall not extend the original warranty period. The warranty period for any Product part replaced under this limited warranty is the applicable warranty period remaining under the original Product warranty.

**WHO IS COVERED:** This limited warranty is provided only to the original owner and his or her spouse ("Purchaser") of the residence where the Products are originally installed. This warranty is not transferable except according to terms stated on the applicable website identified below under Registration Requirements. Company has the right to request any and all proof of Product purchase or installation and/or closing date of the residence.

**WHAT COMPANY WILL DO:** Company may request proof of Product purchase and/or installation in order to provide Product parts under this limited warranty. As Company's only responsibility and Purchaser's only remedy under this limited warranty, Company will furnish a replacement part to the licensed HVAC service provider, without charge for the part only, to replace any Product part that fails due to a manufacturing defect under normal use and maintenance. The Purchaser must pay for any and all shipping and handling charges and other costs of warranty service for the replacement part. If a Product part is not available, Company will, at its option, provide a free suitable substitute part or provide a credit in the amount of the then factory selling price for a new suitable substitute part to be used by the Purchaser towards the retail purchase price of a new Company product. Any new Product purchase shall be at Purchaser's sole cost and expense including, but not limited to, all shipping, removal, and installation costs and expenses.

**REGISTRATION REQUIREMENTS:** All Products must be properly registered online by the Purchaser within sixty (60) days after the Commencement Date to receive the registered limited warranty terms. To register online, go to:

<http://www.trane.com/Residential/For-Owners/Warranties> or

<http://www.americanstandardair.com/servicesupport/pages/warranty.aspx>

and click "Begin Online Registration." If a Purchaser does not register within this stated time period, the base limited warranty terms shall apply.

**ELIGIBILITY REQUIREMENTS:** The following items are required in order for the Products to be covered under this limited warranty:

- The Products must be in the same location where they were originally installed.
- The Products must be properly installed, operated, and maintained by a licensed HVAC service provider in accordance with the Product specifications or installation, operation, and maintenance instructions provided by Company with each Product. Failure to conform to such specifications and/or instructions shall void this limited warranty. Company may request written documentation showing the proper preventative maintenance.
- All Product parts replaced by Company under this limited warranty must be given to the servicing provider for return to Company.
- Air handlers, air conditioners, heat pumps, cased or uncased coils and stand-alone furnaces must be part of an Air Conditioning, Heating, and Refrigeration Institute rated and matched system or a specification in a Company provided bulletin or otherwise approved in writing by a Company authorized representative.

**EXCLUSIONS:** The following are not covered by this limited warranty:

- Labor costs including, but not limited to, costs for diagnostic calls or the removal and reinstallation of Products and/or Product parts.
- Shipping and freight expenses required to ship Product replacement parts.
- Failures, defects, or damage (including, but not limited to, any loss of data or property) caused by (1) any third party product, service, or system connected or used in conjunction with the Products; (2) any use that is not designed or intended for the Products; (3) modification, alteration, abuse, misuse, negligence, or accident; (4) improper storage, installation, maintenance, or operation including, but not limited to, operation of electrical equipment at voltages other than the range specified on the Product nameplate; (5) any use in violation of written instructions or specifications provided by Company; (6) any acts of God including, but not limited to, fire, water, storms, lightning, or earthquakes; or any theft or riots; or (7) a corrosive atmosphere or contact with corrosive materials such as, but not limited to, chlorine, fluorine, salt (provided that indoor and outdoor coils will only be covered if a Sea Coast Kit is installed), sulfur, recycled waste water, urine, fertilizers, rust, or other damaging substances or chemicals.
- Products purchased direct including, but not limited to, Internet or auction purchases and purchases made on an uninstalled basis.
- Cabinets or cabinet pieces that do not affect product performance, air filters, refrigerant, refrigerant line sets, belts, wiring, fuses, surge protection devices, non-factory installed

driers, and Product accessories (unless otherwise specified).

- Increased utility usage costs.

**REFRIGERANT POLICY:** (1) **Manufacturer-Installed Refrigerant:** Beginning on January 1, 2010, R-22 refrigerant will no longer be used as a manufacturer-installed refrigerant as required by federal regulation. All Products with manufacturer-installed refrigerant will include R410-A refrigerant. Any and all expenses or costs associated with replacing Product parts that are not R-410A compatible will not be covered by the terms and conditions of this limited warranty. (2) **Non-Manufacturer installed Refrigerant:** For Products manufactured and sold by the Company without refrigerant, only manufacturer approved and genuine alternate refrigerants shall be used. The use of contaminated, counterfeit, non-genuine, or non-manufacturer approved alternate refrigerant will void this limited warranty. (3) **All Products:** Products include a liquid line filter drier which must be replaced when a compressor replacement is necessary. A suction line filter drier must be added for compressors defined as burnouts and failure to do so will void this warranty. Non-approved refrigerant and/or non-approved refrigerant system additives including, but not limited to dyes will void this limited warranty.

#### ADDITIONAL TERMS:

**THIS LIMITED WARRANTY AND LIABILITY SET FORTH HEREIN ARE IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, WHETHER IN CONTRACT OR IN NEGLIGENCE, EXPRESS OR IMPLIED, IN LAW OR IN FACT. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE DURATION OF THE APPLICABLE PRODUCT WARRANTY. COMPANY DOES NOT AUTHORIZE ANY PERSON TO CREATE FOR IT ANY OBLIGATION OR LIABILITY IN CONNECTION WITH THE PRODUCTS.**

**NOTWITHSTANDING ANYTHING IN THIS LIMITED WARRANTY TO THE CONTRARY, COMPANY SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL AND/OR PUNITIVE DAMAGES, WHETHER BASED ON CONTRACT, WARRANTY, TORT (INCLUDING, BUT NOT LIMITED TO, STRICT LIABILITY OR NEGLIGENCE), PATENT INFRINGEMENT, OR OTHERWISE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. COMPANY'S MAXIMUM LIABILITY HEREUNDER IS LIMITED TO THE ORIGINAL PURCHASE PRICE OF THE PRODUCTS.**

No action arising out of any claimed breach of this limited warranty may be brought by a Purchaser more than one (1) year after the cause of action has arisen.

This limited warranty gives you specific legal rights, and you may also have other rights as otherwise permitted by law. If this Product is considered a consumer product, please be advised that some local laws do not allow limitations on incidental or consequential damages, how long a warranty lasts based on registration, or how long an implied warranty lasts, so that the above limitations may not fully apply. Refer to your local laws for your specific rights under this limited warranty.

Consumer Relations  
20 Corporate Woods Dr.  
Bridgeton, MO 63044

Or visit our website at [www.trane.com](http://www.trane.com) or [www.americanstandardair.com](http://www.americanstandardair.com)

### Table 1A: Warranty Time Periods for Controls, Zoning Products, Humidifiers, Energy Recovery Ventilators, Air Cleaners and Oil Furnaces (Variable and Non-Variable Speed)

**COVERAGE TERMS FOR RESIDENTIAL APPLICATIONS:** Pursuant to the Trane U.S., Inc. ("Company") limited warranty terms and conditions, the following Products are covered for the base time periods as stated below ("Base Limited Warranty period"). If registered, the Base Limited Warranty Periods for certain products will be extended as stated below ("Registered Limited Warranty Period").

**CONTROLS:** \*CONT200, \*CONT401, \*CONT402, \*CONT600, \*CONT602, \*CONT624

Base Limited Warranty Period: one (1) year  
Registered Limited Warranty Period: five (5) years

**CONTROLS:** \*ZEMT500, \*CONT800, \*CONT802, \*CONT803, \*CONT824, \*CONT900, \*ZONE940, \*ZONE950

Base Limited Warranty Period: five (5) years

Registered Limited Warranty Period: ten (10) years

**ZONING PRODUCTS:** \*ZONE950, \*ZONE940, \*ZONE930, ZZONEPNLAC52Z, ZZONE-EXPAC52Z, ZZSENSAL0400, BAYSENO1ATEMPA, BAY24VRP, ZDAMP RD, ZDAMP SM, ZDAMP B M, ZDAMP P R R

Base Limited Warranty Period: five (5) years  
Registered Limited Warranty Period: ten (10) years

**HUMIDIFIERS:** \*HUMD200, \*HUMD300 & \*HUMD500

Base Limited Warranty Period: five (5) years  
Registered Limited Warranty Period: ten (10) years

**ENERGY RECOVERY VENTILATOR (ERV):** \*ERVR100, \*ERVR200 & \*ERVR300

Base Limited Warranty Period: five (5) years  
Registered Limited Warranty Period: ten (10) years

**AIR CLEANERS:** TFD & AFD

Base Limited Warranty Period: five (5) years  
Registered Limited Warranty Period: ten (10) years

**VARIABLE SPEED OIL FURNACE:** \*HV-V, \*LF-V, \*LR-V, \*DF-V

Base Limited Warranty Period: Parts- five (5) years, Heat Exchanger - twenty (20) years  
Registered Limited Warranty Period: Parts - ten (10) years, Heat Exchanger - Lifetime

**NON-VARIABLE SPEED OIL FURNACE:** \*HV, \*LF, \*LR, \*DF

Base Limited Warranty Period: Parts- five (5) years, Heat Exchanger - twenty (20) years  
Registered Limited Warranty Period: Parts - ten (10) years, Heat Exchanger - Lifetime

**SPECIFIC TERMS FOR COMMERCIAL APPLICATIONS:**

Base Limited Warranty Period Applies for all controls, zoning products, humidifiers and ERV's  
All Oil Furnaces: Parts - one (1) year, Heat Exchanger - twenty (20) years.

\* (First digit may be a "T" or an "A")