
INSTALLATION, OPERATION & QUICK START GUIDE

CompleteStat™ Controller

Models:

CS9B-THOA CS9BE-THOA
CS9B-THOCA CS9BE-THOCA



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WIRING DIAGRAMS

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NOTE

Screenshots shown in this manual reflect default settings (when applicable).

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IMPORTANT: For optimum temperature sensor performance, the Bard CompleteStat must be mounted on an interior wall and away from any heat sources, sunlight, windows, air vents, air circulation obstructions and/or any other cause of erratic or false temperature sensing. **Thermostat covers are not recommended as they interfere with motion and temperature sensing.**

Mounting Controller

1. It is recommended that 18 AWG solid-conductor control wire is used for installation. See the low voltage wiring diagrams beginning on page 15 for exact number of conductors.

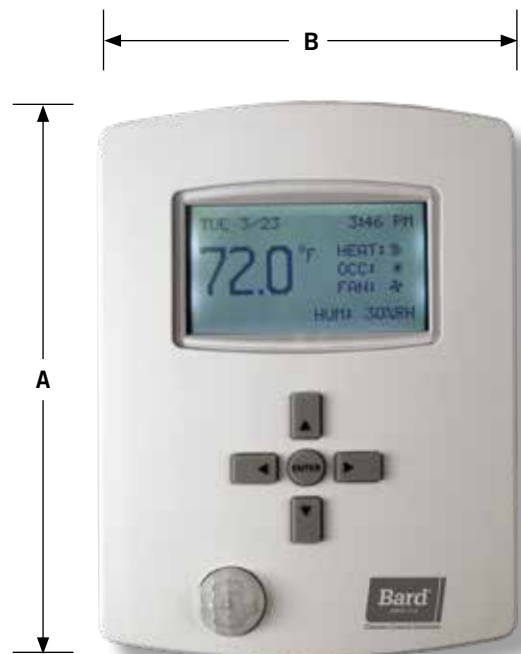
NOTE: *Shielded wire must be used in applications where transient signals may accumulate and affect digital signal from control to unit.*

2. Turn the hex screws in the bottom and top of the controller clockwise (inward) until they clear the cover. Remove base plate from controller.

3. Route control wiring through base plate.
4. With the embossed “UP” arrows of the base plate pointing in the appropriate direction, fasten the base plate to the desired wall location. A vertical/horizontal 2x4 wall handybox can be used for the CO₂-sensing CompleteStat and a vertical-only 2x4 wall handybox can be used for non-CO₂-sensing CompleteStat.
5. Make appropriate control wire connections to terminal blocks. See low voltage wiring diagrams beginning on page 15.
6. Replace controller over base plate, being careful not to pinch/dislodge connections.
7. Turn hex screws in bottom/top of controller counter-clockwise (outward) to secure cover.

FIGURE 1
CompleteStat Dimensions

Models	Dimensions in Inches (mm)		
	Height (A)	Width (B)	Depth
CS9B(E)-THOA	5.551	4.192 (106)	1.125 (29)
CS9B(E)-THOCA	(141)	5.192 (132)	1.437 (36.5)



CompleteStat Setup at Time of Installation

Determine the following information prior to installation.

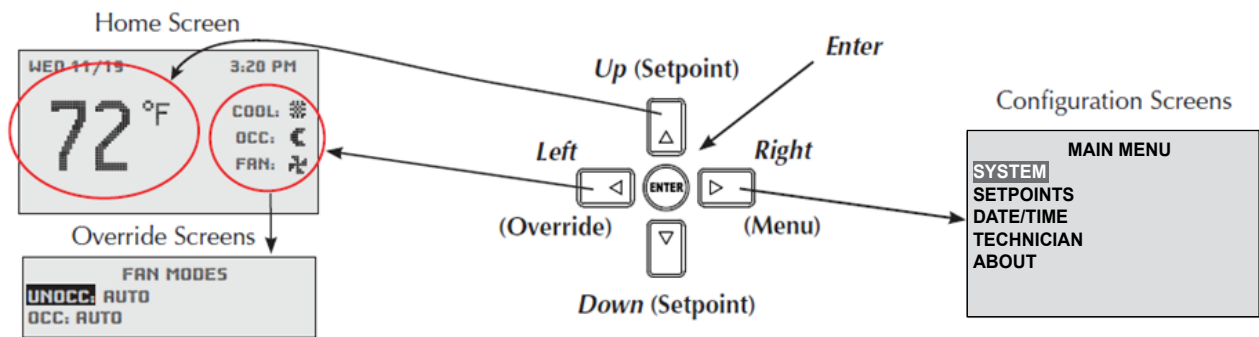
1. Degrees Scale: °F _____ °C _____
2. Unit Type: A/C _____ HP _____
3. Options: A/C – 1H/1C _____ 2H/2C _____ 1H/2C _____ 2H/1C _____
HP – 1 Stage _____ 2 Stage _____
4. Economizer: Yes _____ No _____
5. Fan: Off Delay _____ (seconds) Unoccupied: Auto _____ On _____ Occupied: Auto _____ On _____
6. Humidity: Dehumidification Yes _____ No _____
7. Humidity Setpoint: _____
8. Dehum Span: _____
9. Electric Strip Heat: Yes _____ No _____
10. Reversing Valve: Active Htg _____ Active Clg _____
11. System: Off _____ Cool _____ Heat _____ Auto _____
12. Cool Setpoint: _____
13. Heat Setpoint: _____
14. Cool Setback: _____
15. Heat Setback: _____
16. Standby Time: _____ Minutes
17. Motion Sensing: _____ Daily Schedule _____
18. Date: _____
19. Time: _____
20. Occupied Minimum Cooling: _____
21. Occupied Maximum Cooling: _____
22. Unoccupied Minimum Cooling: _____
23. Unoccupied Maximum Cooling: _____
24. CO₂ Setpoint: _____
25. CO₂ Span: _____

NOTES _____

BASIC SETUP

These instructions are intended to provide the basic settings to get the equipment started.

FIGURE 2
CompleteStat Buttons and Home, Override and Configuration Screens



Navigate the menus and change settings by pressing a combination of the four arrow buttons and the ENTER button.

- **ENTER** button to select and/or exit value editing
- **UP** or **DOWN** button to move among entries
- **RIGHT** or **LEFT** button to move among value fields
- **LEFT** button to return to the home screen

NOTE: Although cooling/heating setpoints can be accessed by simply pressing the UP or DOWN buttons during normal operation, any changes made in this fashion will not be permanent but last only for a specific length of time as an “override” feature. See **Setpoints** on page 9 for further information.

NOTE: The screen will revert back to the home screen if inactive for “X” number of seconds (factory default is 120 seconds). See page 14 in the latest version of **CompleteStat Controller Advanced Programming & Features 2100-685** for information on adjusting the inactivity setting.

NOTE: If the screen includes up and down arrows in the upper corners (as shown in Figure 7 on page 7), additional choices can be found by continuing to press the UP or DOWN buttons.

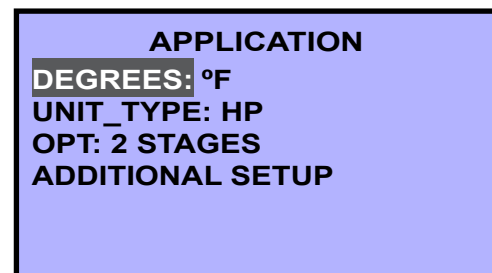
QUICK START PROGRAMMING

System Selection

To select A/C or HP, stages of heating and cooling, and with/without economizer:

1. Press RIGHT button to access Main Menu screen.
2. Press DOWN button to scroll to TECHNICIAN. Press ENTER button.
3. Controller will ask for password. Press UP and RIGHT buttons to enter ‘BARD’. Press ENTER button.
4. Press ENTER button again to enter the APPLICATION menu (see Figure 3).

FIGURE 3
Application Menu



5. Press ENTER button again to choose DEGREES.

NOTE: The UNIT_TYPE category must be set to “NOT CONFIGURED” before the controller will allow the scale to be changed (see step 7 on page 6).

6. Press UP or DOWN button to choose °F (Fahrenheit) or °C (Celsius). Press ENTER to save selection of scale.
- NOTE:** *The change from F to C will not take effect on the home screen until the 24VAC power is cycled off and back on.*
7. Press DOWN button to scroll to UNIT_TYPE. Press ENTER button.
 8. Press UP or DOWN button to choose from the available system types (A/C, HP or Not Configured). Press ENTER button to select/save appropriate choice.
 10. Press DOWN button to scroll to OPT. Press ENTER button.
 11. Press UP or DOWN button to choose from the following available system stages:
 - A/C – 1H/1C HP – 1 Stage
 - A/C – 2H/2C HP – 2 Stages
 - A/C – 1H/2C
 - A/C – 2H/1C

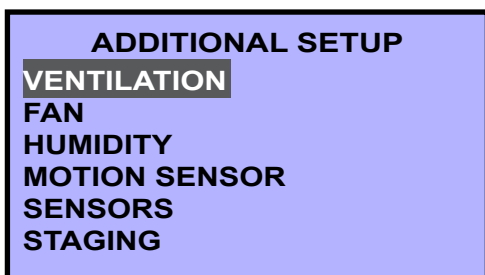
NOTE: *These are stages of compressor operation.*

12. Press ENTER button to select/save appropriate model stage.
13. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.

Air Conditioner Applications (see Figure 4)

NOTE: *The following is for A/C applications. Heat pump application information can be found in the following section.*

**FIGURE 4
Additional Setup (Air Conditioner)**

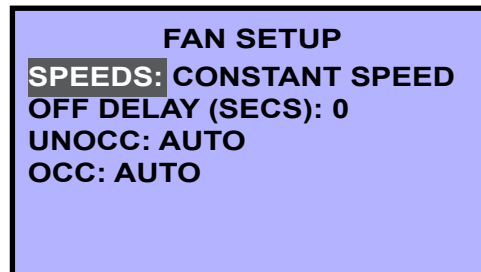


Ventilation, Fan and Humidity Setup

1. Press ENTER button to enter VENTILATION menu.
2. Press ENTER button to highlight ECON options. Press UP or DOWN button to choose from the available economizer options:
 - NONE = No economizer, or standard vent package (ERV/CRV/MFAD)
 - EN/DIS = Economizer in system

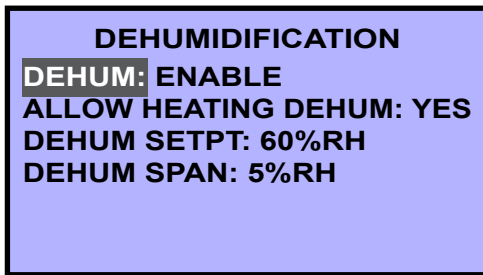
3. Press ENTER button to select/save appropriate economizer option.
4. Press LEFT button to go back to ADDITIONAL SETUP.
5. The indoor blower can be set for ON or AUTO in either occupied or unoccupied conditions. To access or change blower settings, press DOWN button to scroll to FAN. Press ENTER button to enter FAN SETUP (see Figure 5).

**FIGURE 5
Fan Setup (Air Conditioner)**



6. Press DOWN button to scroll through selections; adjust as necessary.
 - Speeds: Constant speed (nonadjustable)
 - Off Delay: "0" = System fan will run for specified time after call ends; 0-600 seconds in 30-second increments.
 - Unocc: "ON" = System fan will run continuously during all operational modes; "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed (factory default).
 - Occ: "ON" = System fan will run continuously during all operational modes; "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed (factory default).
7. Press ENTER button to save changes to FAN mode selections.
8. Press LEFT button to go back to ADDITIONAL SETUP.
9. Press DOWN button to scroll to HUMIDITY. Press ENTER button to enter HUMIDITY SETUP.
10. Press DOWN button to scroll to DEHUMIDIFICATION. Press ENTER button (see Figure 6).
11. Press ENTER button again to highlight current dehum choice (default is ENABLE).

FIGURE 6
Dehumidification (Air Conditioner)

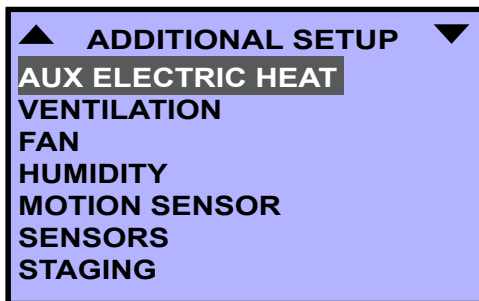


12. Press UP or DOWN button to toggle ENABLE/DISABLE. Press ENTER button to select/save choice.
13. Press DOWN button to scroll through additional DEHUMIDIFICATION screen choices:
 - ALLOW HTG DEHUM = Allows dehumidification in heating: YES/NO (default is YES).
 - DEHUM SETPT = Relative Humidity (RH) setpoint: 45% RH to 80% RH, 1% increments (default is 60%RH).
 - DEHUM SPAN = Amount of RH% removal allowed past setpoint: 5% to 10%, 1% increments (default is 5%RH).
14. Press ENTER button to save changes.
15. Press LEFT button to return to the home screen. Proceed to **System Enable** on page 9 to continue the setup process.

Heat Pump Applications (see Figure 7)

NOTE: *The following is for heat pump applications. A/C application information can be found in the previous section.*

FIGURE 7
Additional Setup (Heat Pump)

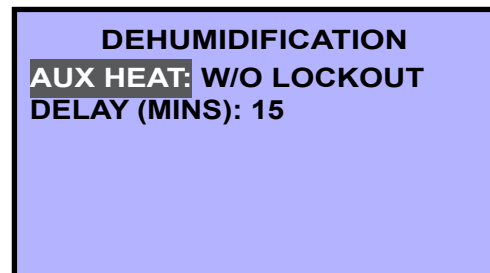


Auxiliary Electric Heat Setup

If the heat pump selection is chosen, electric heat must be configured. These steps do not apply to air conditioners or other types of conventional heating. To configure the auxiliary heat from the home screen:

1. Press RIGHT button to access Main Menu screen.
2. Press DOWN button to scroll to TECHNICIAN. Press ENTER button.
3. Controller will ask for password. Press UP and RIGHT buttons to enter 'BARD'. Press ENTER button.
4. In the TECHNICIAN menu screen, press ENTER button to enter the APPLICATION menu.
5. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.
6. Press ENTER button again to choose AUX ELECTRIC HEAT.
7. Press ENTER button again to highlight current AUX HEAT choices (see Figure 8).
8. Press UP or DOWN button to scroll through AUX HEAT screen choices:
 - W/O LOCKOUT = Auxiliary heat will activate regardless of compressor operation or outdoor air temperature (factory default). If W/O LOCKOUT is chosen, proceed to set delay-on time (Step 9).
 - COMP LOCKOUT = Compressor locks out below the selected outdoor air temperature. *Requires optional Bard 8403-061 Outdoor Air Temperature Sensor.*
 - NONE = No auxiliary strip heat; controller will not energize W2. If NONE is chosen, press LEFT button to return to the home screen.
9. Press DOWN button to highlight DELAY (MINS).
10. Press ENTER button to highlight default DELAY minutes.
11. Press UP or DOWN button to select amount of minutes desired to delay the electric heat before activation: 10-120 minutes, in 10 minute increments (factory default 15 minutes). Press ENTER button to save choice.
12. Press LEFT button to return to ADDITIONAL SETUP.

FIGURE 8
Aux Heat Setup



If COMP LOCKOUT was chosen during the heat strip configuration process, an optional outdoor air temperature sensor will have to be installed/ configured to specifically set the temperature at which the compressor will no longer be allowed to operate. Refer to the latest version of **CompleteStat Controller Advanced Programming & Features 2100-685** to configure the outdoor air temperature sensor.

To install Bard 8403-061 Outdoor Air Temperature Sensor, attach the leads to terminals "OAT" and "GND". To set the compressor outdoor air temperature limits from the home screen:

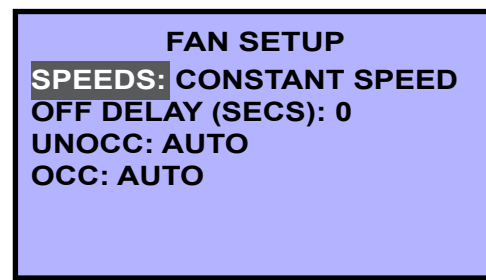
1. Press RIGHT button to access Main Menu screen.
2. Press DOWN button to scroll to TECHNICIAN. Press ENTER button.
3. In the TECHNICIAN menu screen, press UP or DOWN button to scroll to LIMITS. Press ENTER button.
4. Press DOWN button to scroll to COMP OAT CLG LOW. Press ENTER button.
5. Press UP or DOWN button to select outdoor air temperature for compressor lockout (factory default 0°F). Press ENTER to save choice.
6. Press LEFT button to return to TECHNICIAN menu.

Ventilation, Fan and Humidity Setup

1. In the TECHNICIAN menu screen, press ENTER button to enter the APPLICATION menu.
2. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.
3. Press DOWN button to scroll to VENTILATION. Press ENTER button.
4. Press UP or DOWN button to choose from the available economizer options:
 - NONE = No economizer, or standard vent package (ERV/CRV/MFAD). This is the factory default.
 - EN/DIS = Economizer in system
5. Press ENTER button to select/save appropriate economizer option.
6. Press LEFT button to go back to ADDITIONAL SETUP.
7. The indoor blower can be set for ON or AUTO in either occupied or unoccupied conditions. To access or change blower settings, press DOWN button to scroll to FAN. Press ENTER button to enter FAN SETUP (see Figure 9).
8. Press DOWN button to scroll through selections; adjust as necessary.
 - Speeds: Constant speed (nonadjustable)

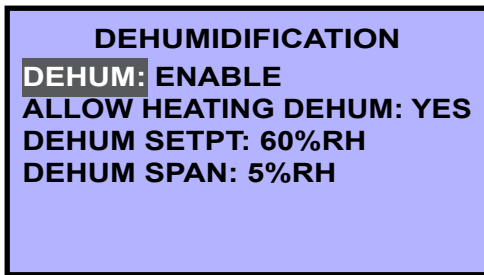
- Off Delay: "0" = System fan will run for specified time after call ends; 0-600 seconds in 30-second increments.
 - Unocc: "ON" = System fan will run continuously during all operational modes; "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed (factory default).
 - Occ: "ON" = System fan will run continuously during all operational modes; "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed (factory default).
9. Press ENTER button to save changes to FAN SETUP selections.

**FIGURE 9
Fan Setup (Heat Pump)**



10. Press LEFT button to go back to ADDITIONAL SETUP.
11. Press DOWN button to scroll to HUMIDITY. Press ENTER button to enter HUMIDITY SETUP.
12. Press ENTER button again to choose DEHUMIDIFICATION (see Figure 10).
13. Press ENTER button again to highlight current dehum choice (default is ENABLE).
14. Press UP or DOWN button to toggle ENABLE/DISABLE. Press ENTER button to select/save choice.
15. Press DOWN button to scroll through additional DEHUMIDIFICATION screen choices:
 - ALLOW HTG DEHUM = Allows dehumidification in heating as well as cooling: YES/NO (default is YES).
 - DEHUM SETPT = Relative Humidity (RH) setpoint: 45% RH to 80% RH, 1% increments (default is 60%RH).
 - DEHUM SPAN = Amount of RH% removal allowed past setpoint: 5% to 10%, 1% increments (default is 5%RH).
16. Press ENTER button to save changes.

FIGURE 10
Dehumidification (Heat Pump)



Reversing Valve Setup

1. Press LEFT button two (2) times to return to ADDITIONAL SETUP.
2. Press UP or DOWN buttons to scroll to VALVE (see Figure 11). **NOTE:** VALVE does not show up on first screen. Continuing to press the UP or DOWN button will display VALVE.
3. Press ENTER button to highlight choice of ACTIVE HTG or ACTIVE CLG. Press UP or DOWN button to toggle between the choices. Press ENTER button to save choice.
4. Press LEFT button to return to the home screen.

FIGURE 11
Additional Setup (Heat Pump)



System Enable

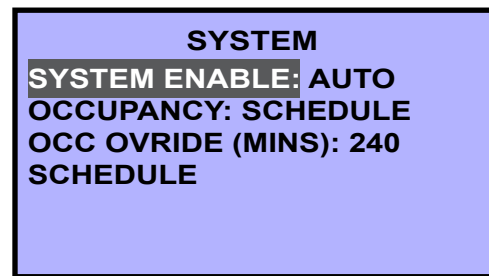
To enable heating or cooling from the home screen:

1. Press RIGHT button to access the Main Menu screen.
2. Press ENTER button to enter the SYSTEM menu (see Figure 12).
3. Press ENTER button to choose from available SYSTEM ENABLE options (use UP or DOWN buttons to scroll through choices):
 - AUTO (factory default) = System is in “Auto-Changeover” mode. HVAC system will cycle heating and cooling automatically to stay within preset heating and cooling setpoints.

- EMER HT = HP mode only.
- OFF = HVAC system is inactive.
- COOLING = System is in “Cooling-Only” mode. HVAC system will cycle cooling in reference to cooling setpoint only. Unit will not activate heating sequence.
- HEATING = System is in “Heating-Only” mode. HVAC system will cycle heating in reference to heating setpoint only. Unit will not activate cooling sequence.

4. Press ENTER button to save choice.
5. Press LEFT button to return to the home screen.

FIGURE 12
System Enable

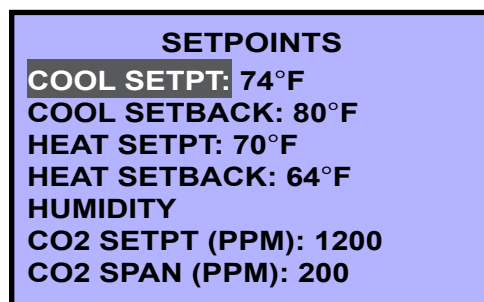


Setpoints

To access setpoints from the home screen:

1. Press RIGHT button to access the Main Menu screen.
2. Press DOWN button to scroll to SETPOINTS. Press ENTER button (see Figure 13). Factory default values are shown in the figure.

FIGURE 13
Setpoints



3. Press ENTER button to select COOL SETPT.
4. Press UP or DOWN buttons to enter appropriate cooling setpoint. Press ENTER button to save new cooling setpoint.
5. Press DOWN button to scroll to HEAT SETPT. Press ENTER button.

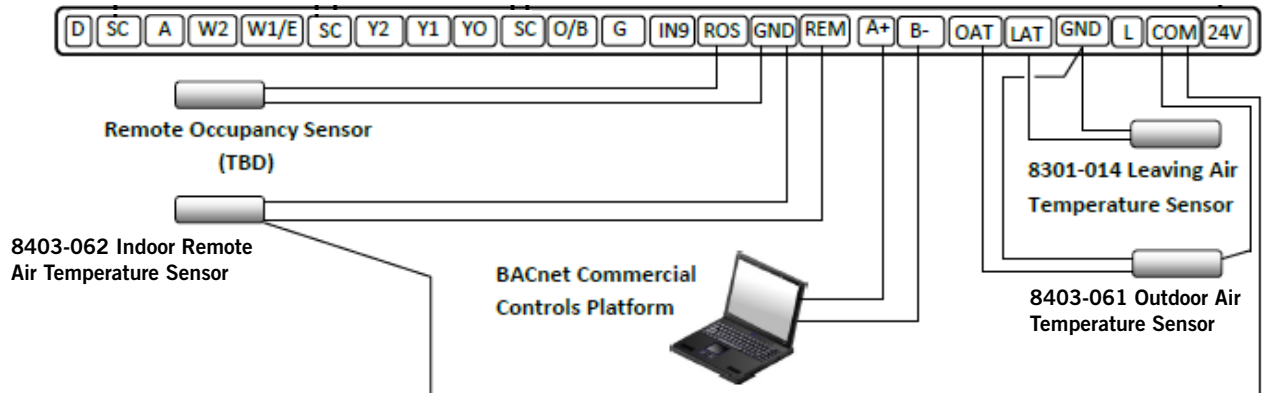
6. Press UP or DOWN buttons to enter appropriate heating setpoint. Press ENTER button to save new heating setpoint.
7. Follow the steps provided above to adjust cooling and heating setback temperatures, dehum setpoint and span, and CO₂ setpoint and span of control in parts per million (if available).
8. Press LEFT button to return to the home screen.

NOTE: *The controller will not allow heating/cooling setpoints to contradict one another, or to be within a degree of conflicting operation.*

NOTE: *Any system startup with indoor ambient temperatures lower than 56°F or above 86°F, or humidity higher than 65%, will experience an internal Low Temperature or High Temperature alarm. This will not affect normal operation and can be cleared easily.*

Bard CompleteStat should be operational at this point. For further controller enhancement or operation detail, please consult the latest edition of **CompleteStat Advanced Programming & Features 2100-685**.

FIGURE 14
CompleteStat Terminal Descriptors and Optional Inputs



NOTE: Use twisted shielded pair for optional outdoor and indoor air sensors. Connect shield (drain) to 24V common.

TABLE 1
Controller Connections

Terminal	Function	Type	Form
D	Dehumidification	Output	24VAC SPST Relay
SC	Not Used		24VAC Hot
A	Ventilation Call	Output	24VAC SPST Relay
W2	2 nd Stage Heating	Output	24VAC SPST Relay
W1/E	1 st Stage Heating/Emergency Heat	Output	24VAC SPST Relay
SC	Not Used		24VAC Hot
Y2	2nd Stage Compressor	Output	24VAC SPST Relay
Y1	1st Stage Compressor	Output	24VAC SPST Relay
YO	Economizer	Output	24VAC SPST Relay
SC	Not Used		24VAC Hot
O/B	Reversing Valve	Output	24VAC SPST Relay
G	Indoor Blower	Output	24VAC SPST Relay
IN9	Not Used		
ROS	Remote Occupancy Sensor	Input	Dry Contact (Input to GND)
GND	Sensor Ground		
REM	Remote Temperature Sensor	Input	10K Type II Thermistor
+B	Communications		
-A	Communications		
OAT	Outdoor Air Temperature Sensor	Input	10K Type II Thermistor
LAT	Leaving Air Temperature Sensor	Input	10K Type II Thermistor
GND	Sensor Ground		
L	Lockout Alarm	Input	24VAC
Com	24VAC Common	Power	
24V	24VAC Hot	Power	

SEQUENCE OF OPERATION

TABLE 2
Conventional 1H/1C, 2H/1C, 1H/2C or 2H/2C without Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling	X		X						
2 nd Stage Cooling (if employed)	X		X	X					
1 st Stage Heating	X				X				
2 nd Stage Heating (if employed)	X				X	X			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

TABLE 3
Conventional 1H/1C, 2H/1C, 1H/2C or 2H/2C with Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling (Economizer)	X	X							
2 nd Stage Cooling	X	X	X						
3 rd Stage Cooling (if employed)	X	X	X	X					
1 st Stage Heating	X				X				
2 nd Stage Heating (if employed)	X				X	X			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

TABLE 4
Single Stage Heat Pump without Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling	X		X						
1 st Stage Heating	X	X	X				X ²		
2 nd Stage Heating	X	X	X			X ³	X ²		
Emergency Heat	X				X	X ³			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

² CompleteStat controller can be configured to energize reversing valve in cooling (see **System Selection** on page 5).

³ Electric heat must be configured for a heat pump application (see **Auxiliary Electric Heat Setup** on page 7).

TABLE 5
Two Stage Heat Pump without Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling	X		X						
2 nd Stage Cooling	X		X	X					
1 st Stage Heating	X	X	X				X ²		
2 nd Stage Heating	X	X	X	X			X ²		
3 rd Stage Heating	X	X	X	X		X ³	X ²		
Emergency Heat	X				X	X ³			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

² CompleteStat controller can be configured to energize reversing valve in cooling (see **System Selection** on page 5).

³ Electric heat must be configured for a heat pump application (see **Auxiliary Electric Heat Setup** on page 7).

SEQUENCE OF OPERATION (CONT.)

TABLE 6
Single Stage Heat Pump with Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling	X	X	X						
2 nd Stage Cooling	X	X	X						
1 st Stage Heating	X	X	X				X ²		
2 nd Stage Heating	X	X	X			X ³	X ²		
Emergency Heat	X				X	X ³			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

² CompleteStat controller can be configured to energize reversing valve in cooling (see **System Selection** on page 5).

³ Electric heat must be configured for a heat pump application (see **Auxiliary Electric Heat Setup** on page 7).

TABLE 7
Two Stage Heat Pump with Economizer

Operation	G	Y/O	Y1	Y2	W1/E	W2	O/B	D	A
Fan Only	X								
1 st Stage Cooling	X	X	X						
2 nd Stage Cooling	X	X	X						
3 rd Stage Cooling	X	X	X	X					
1 st Stage Heating	X	X	X				X ²		
2 nd Stage Heating	X	X	X	X			X ²		
3 rd Stage Heating	X	X	X	X		X ³	X ²		
Emergency Heat	X				X	X ³			
Dehumidification								X	
Ventilation ¹	X ¹								X

¹ **CS9B(E)-THOCA** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOA** (Non-CO₂ Sensing) models will activate the **A** terminal only if there is an existing call for the indoor blower, whether through space conditioning or through constant fan operation.

² CompleteStat controller can be configured to energize reversing valve in cooling (see **System Selection** on page 5).

³ Electric heat must be configured for a heat pump application (see **Auxiliary Electric Heat Setup** on page 7).

WIRING DIAGRAMS

TABLE 8
Wiring Diagram Index

No.	Unit Type	CompleteStat Model CS9B(E)- ¹	CompleteStat System Type	System Stages Setting	Economizer Setting	Use with Bard Units	Ventilation System	Vent Control Type
1	A/C	THOA, THOCA	A/C	2H/2C	None	1 or 2-Stage A/C w/ or w/o Elec. Heat	CRV, ERV, MFAD	On/Off
2	A/C	THOA, THOCA	A/C	2H/2C	EN/DIS	1-Stage A/C with or w/o Elec. Heat	ECONWM Factory "T" or "W" Economizer w/ JADE W7220 Control	On/Off
3	A/C	THOA, THOCA	A/C	2H/2C	EN/DIS	2-Stage A/C with or w/o Elec. Heat	ECONWM Factory "T" or "W" Economizer w/ JADE W7220 Control	On/Off
4	HP	THOA, THOCA	HP	1 Stage	None	1-Stage HP with or w/o Elec. Heat	CRV, ERV, MFAD	On/Off
5	HP	THOA, THOCA	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	CRV, ERV, MFAD	On/Off
6	HP	THOA, THOCA	HP	1 Stage	EN/DIS	1-Stage HP with or w/o Elec. Heat	ECONWM Factory "T" or "W" Economizer w/ JADE W7220 Control	On/Off
7	HP	THOA, THOCA	HP	2 Stage	EN/DIS	2-Stage HP with or w/o Elec. Heat	ECONWM Factory "T" or "W" Economizer w/ JADE W7220 Control	On/Off
8	Gas/Electric	THOA, THOCA	A/C	1H/1C	None	1-Stage A/C with Gas Heat	CRV, ERV, MFAD	On/Off
9	Gas/Electric	THOA, THOCA	A/C	1H/2C	None	2-Stage A/C with Gas Heat	CRV, ERV, MFAD	On/Off
10	I-TEC® HP	THOA, THOCA	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	None	On/Off
11	I-TEC® HP	THOA, THOCA	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	CRV	On/Off
12	I-TEC® HP	THOA	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	Modulating ERV, use -THOA plus 8403-067 CO ₂ controller	Mod. ²
13	Q-TEC™ QA	THOA, THOCA	A/C	2H/1C	None	1-Stage A/C with or w/o Elec. Heat	CRV, ERV	On/Off
14	Q-TEC™ QH	THOA, THOCA	HP	1 Stage	None	1-Stage HP with or w/o Elec. Heat	CRV, ERV	On/Off
15	QWS	THOA, THOCA	HP	2 Stage	None	2-Stage Geo/Water Source HP	CRV, ERV	On/Off
16	C**H	THOA, THOCA	HP	2 Stage	EN/DIS	2-Stage HP with or w/o Elec. Heat	ECONCH Factory "S" w/JADE W7220 Control	On/Off

¹ Either THOA or THOCA version can be used. For THOA, vent output "A" limits vent operation to occupied periods. For THOCA, vent output "A" operates vent based on CO₂ level.

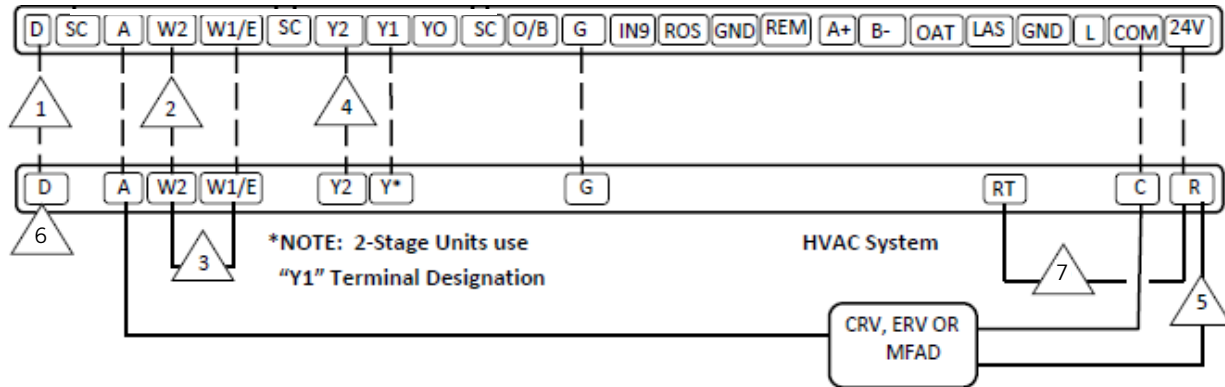
² Modulating

WIRING DIAGRAMS

WIRING DIAGRAM 1

Conventional 1H/1C, 1H/2C, 2H/1C or 2H/2C, with or without Dehumidification and Ventilation, No Economizer

CompleteStat™



--- Field-installed wires and jumpers

— Factory-installed wires and jumpers



Wire for dehumidification units only



Optional wire only for 2 stage heating (15kW or more)



Remove jumper for 2 stage heat (15kW or more)



Wire only for 2 stage cooling, if available



Wire not used on MFAD ventilation option

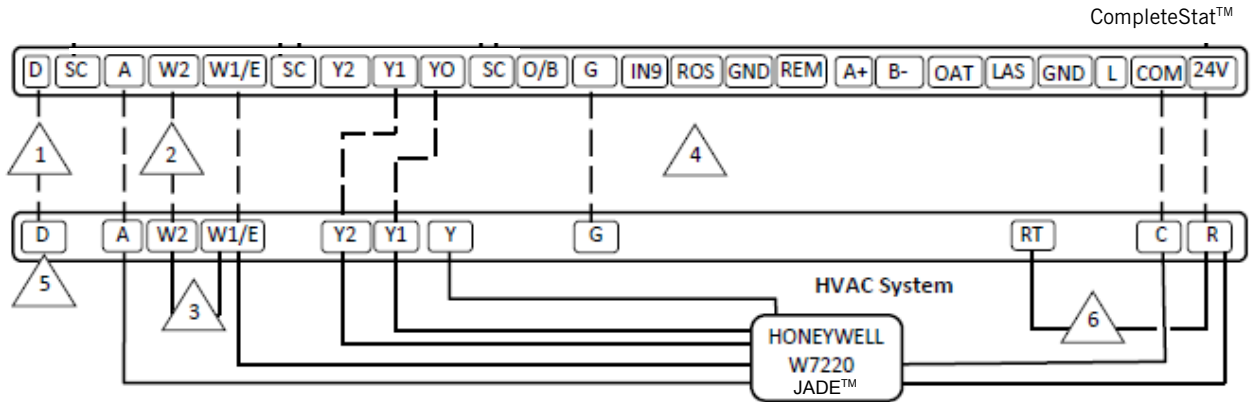


W**A2 units use "D" terminal
W**A1 units use "3" terminal



For fire-smoke/emergency shutdown, remove factory jumper and connect NC contacts from field-installed device to terminals "RT" and "R". Only offered on single stage W**A2 units.

WIRING DIAGRAM 2
Conventional 1H/1C or 2H/1C with Honeywell W7220 Jade™ Control Economizer,
with or without Dehumidification



--- Field-installed wires and jumpers

———— Factory-installed wires and jumpers



Wire for dehumidification units only



Optional wire only for 2 stage heating (15kW or more)



Remove jumper for 2 stage heat (15kW or more)



CompleteStat programmed for damper/economizer: Enable/Disable



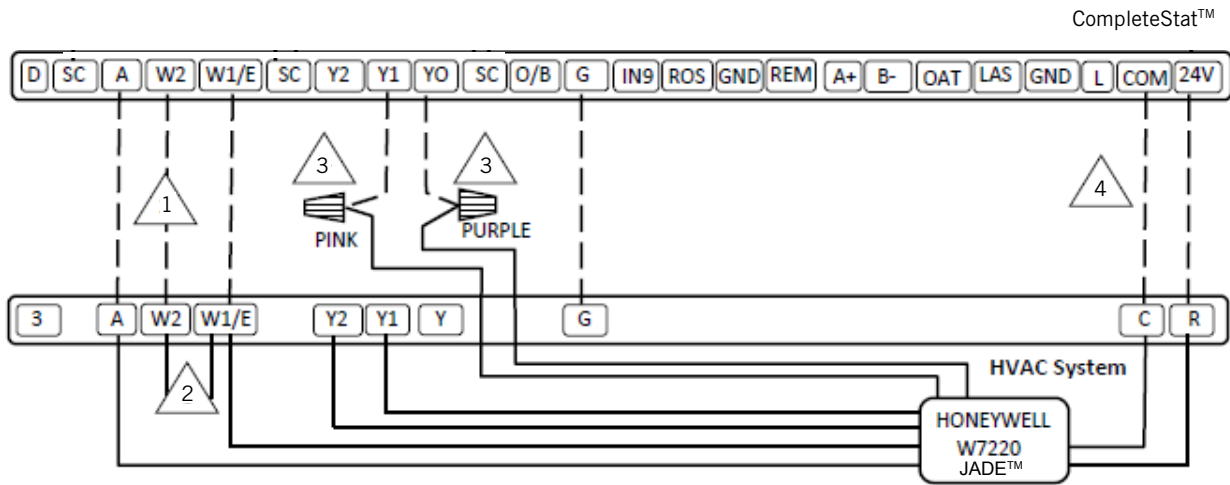
W**A2 units use "D" terminal
W**A1 units use "3" terminal



For fire-smoke/emergency shutdown, remove factory jumper and connect NC contacts from field-installed device to terminals "RT" and "R". Only offered on single stage W**A2 units.

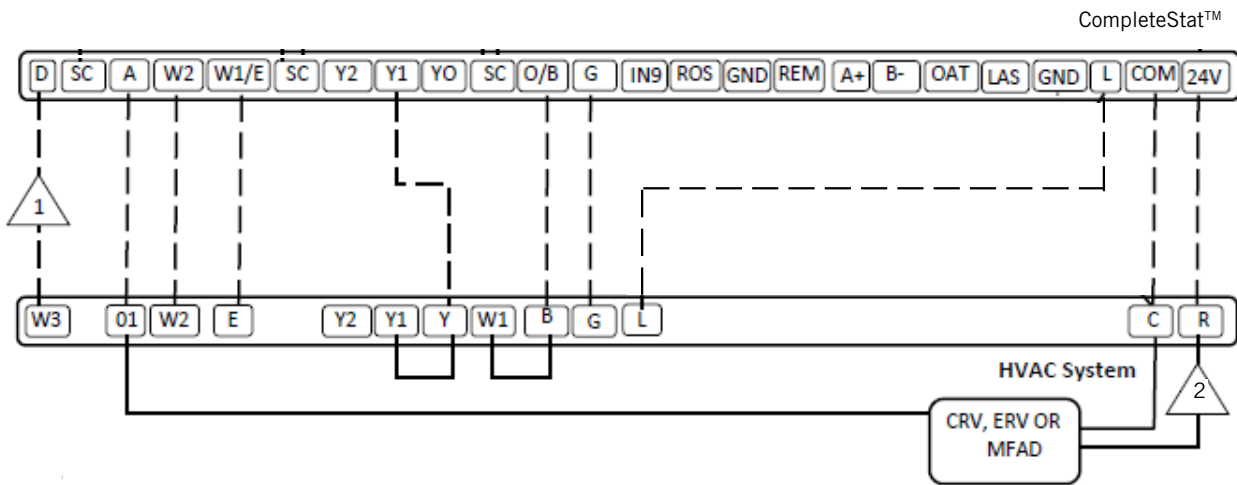
WIRING DIAGRAMS (CONT.)

WIRING DIAGRAM 3
 Conventional 1H/2C or 2H/2C with Honeywell W7220 Jade™ Control Economizer,
 No Dehumidification, 2 Stage Compressor Only



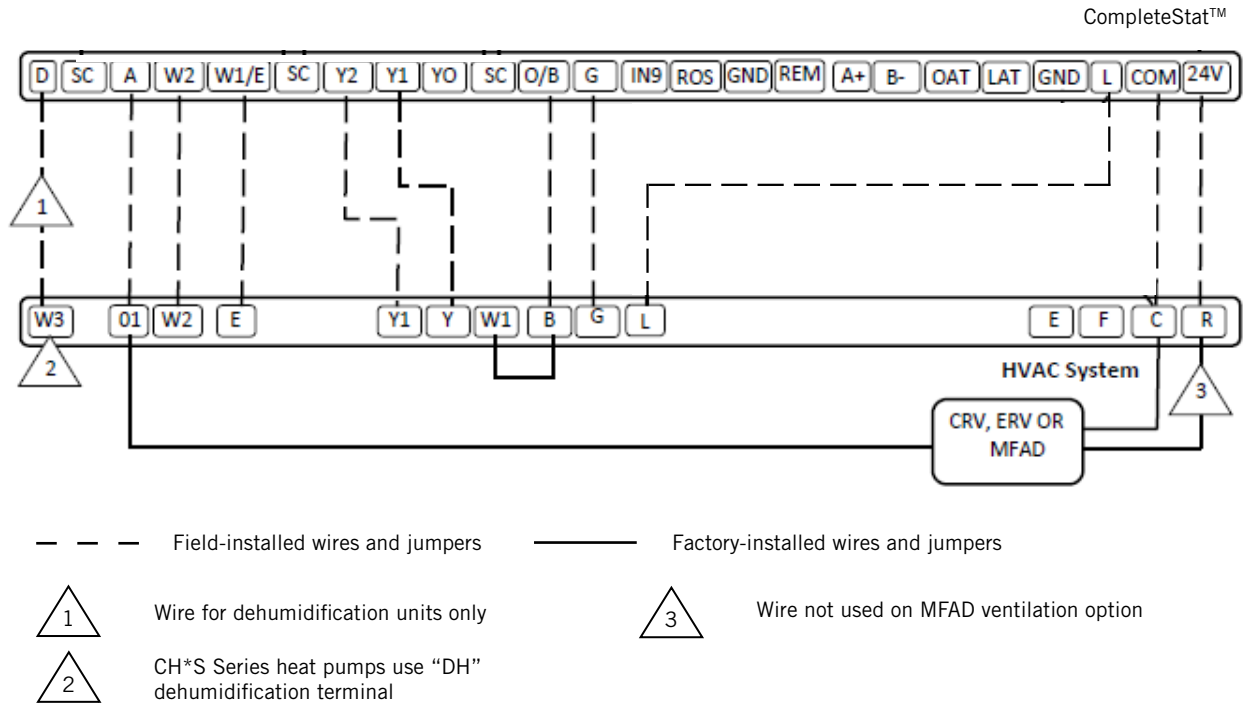
- Field-installed wires and jumpers
- Factory-installed wires and jumpers
- △ 1 Optional wire only for 2 stage heating (15kW or more)
- △ 2 Remove jumper for 2 stage heat (15kW or more)
- △ 3 Field-installed wire nut
- △ 4 CompleteStat programmed for damper/economizer: Enable/Disable

WIRING DIAGRAM 4
 Heat Pump 2H/1C or 3H/1C, with or without Dehumidification and Ventilation, no Economizer

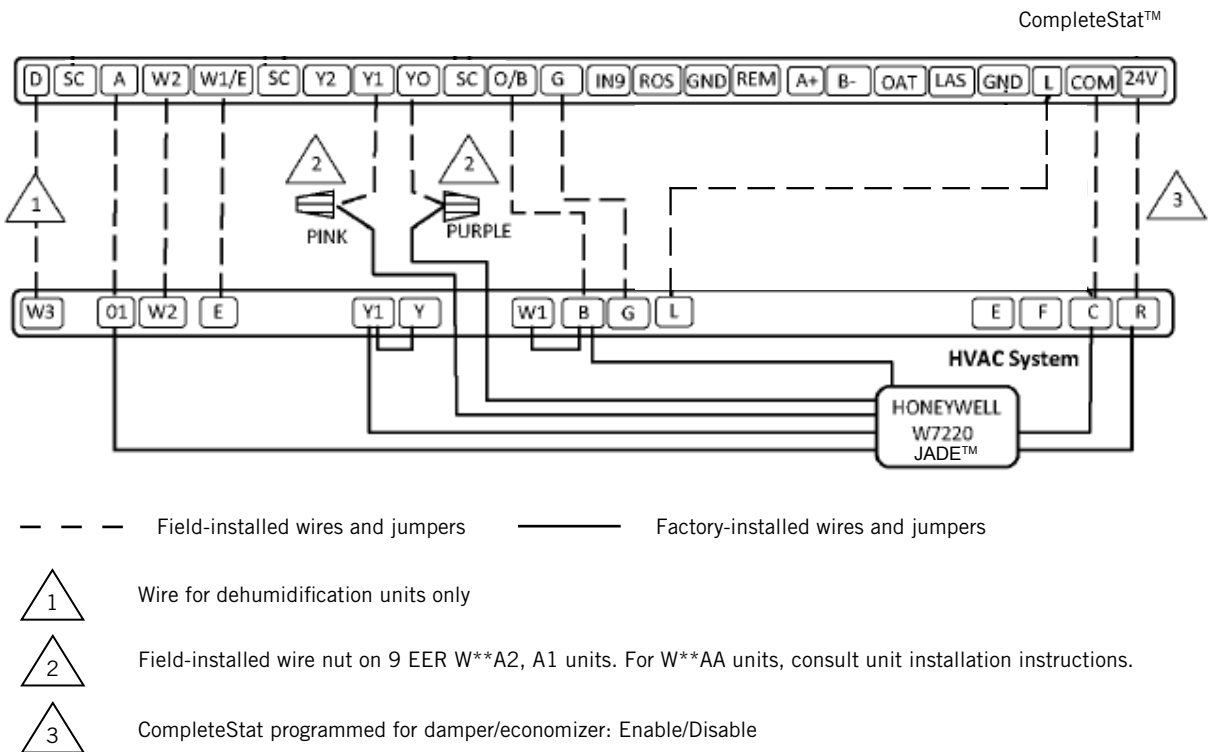


- Field-installed wires and jumpers
- Factory-installed wires and jumpers
- △ 1 Wire for dehumidification units only
- △ 2 Wire not used on MFAD ventilation option

WIRING DIAGRAM 5 Heat Pump 2 Stage, with or without Dehumidification and Ventilation



WIRING DIAGRAM 6 Heat Pump 1 Stage with Honeywell W7220 Jade™ Control Economizer, with or without Dehumidification

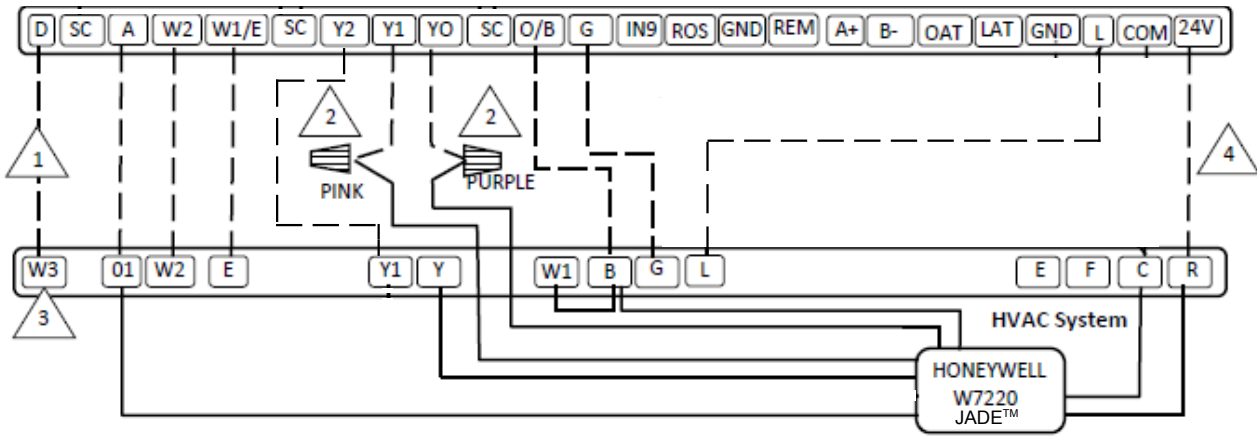


WIRING DIAGRAMS (CONT.)

WIRING DIAGRAM 7

Heat Pump 2 Stage with Honeywell W7220 Jade™ Control Economizer, with or without Dehumidification

CompleteStat™



--- Field-installed wires and jumpers

— Factory-installed wires and jumpers



Wire for dehumidification units only



CH*S Series heat pumps use "DH" dehumidification terminal



Field-installed wire nut

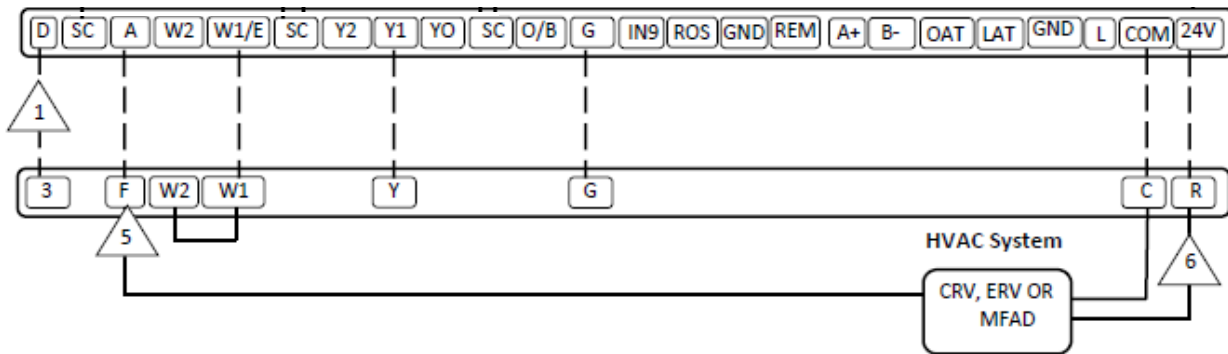


CompleteStat programmed for damper/economizer: Enable/Disable

WIRING DIAGRAM 8

Gas/Electric 1H/1C, with or without Dehumidification and Ventilation, No Economizer

CompleteStat™



--- Field-installed wires and jumpers

— Factory-installed wires and jumpers



Wire for dehumidification units only

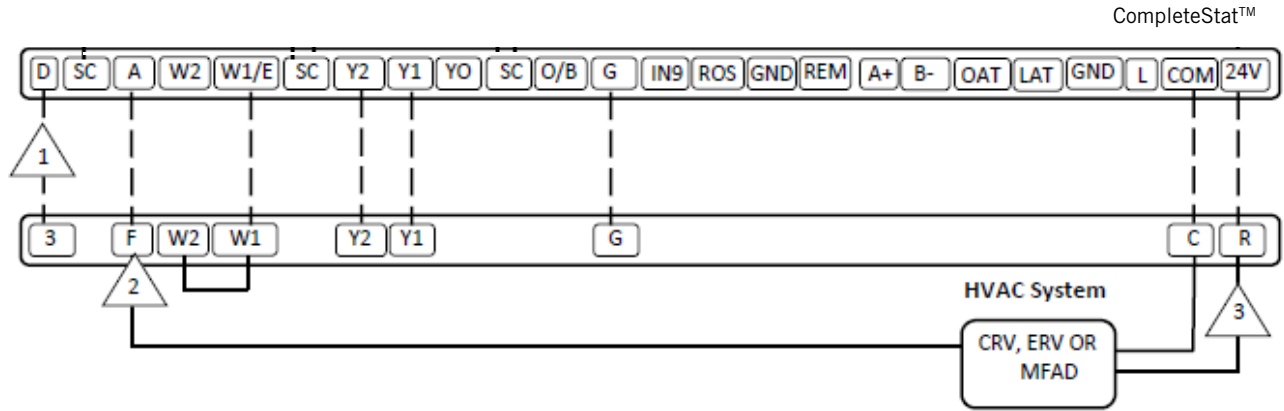


Wire not used on MFAD ventilation option



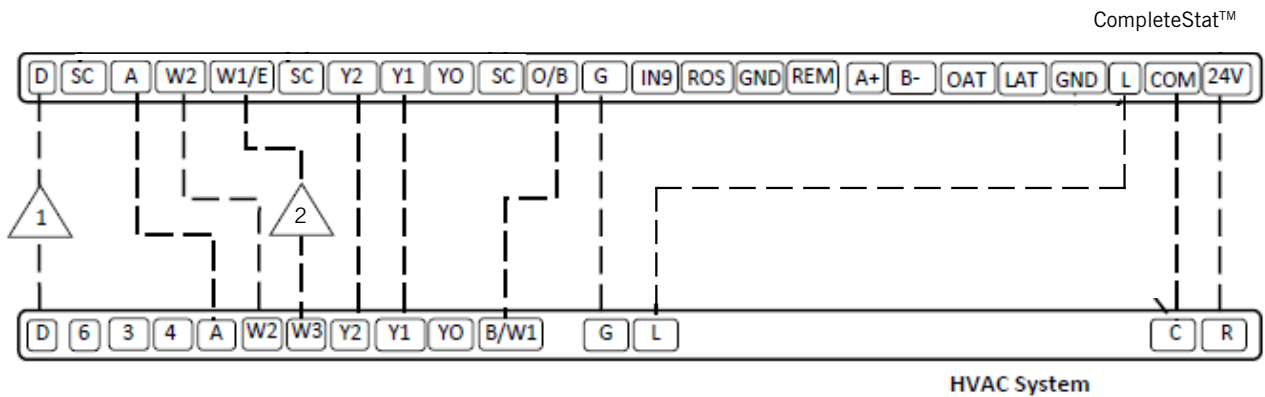
W**G Series uses "A" terminal for ventilation

WIRING DIAGRAM 9
Gas/Electric 1H/2C, with or without Dehumidification and Ventilation, No Economizer



- Field-installed wires and jumpers ——— Factory-installed wires and jumpers
- △ 1 Wire for dehumidification units only △ 3 Wire not used on MFAD ventilation option
- △ 2 W**G Series uses "A" terminal for ventilation

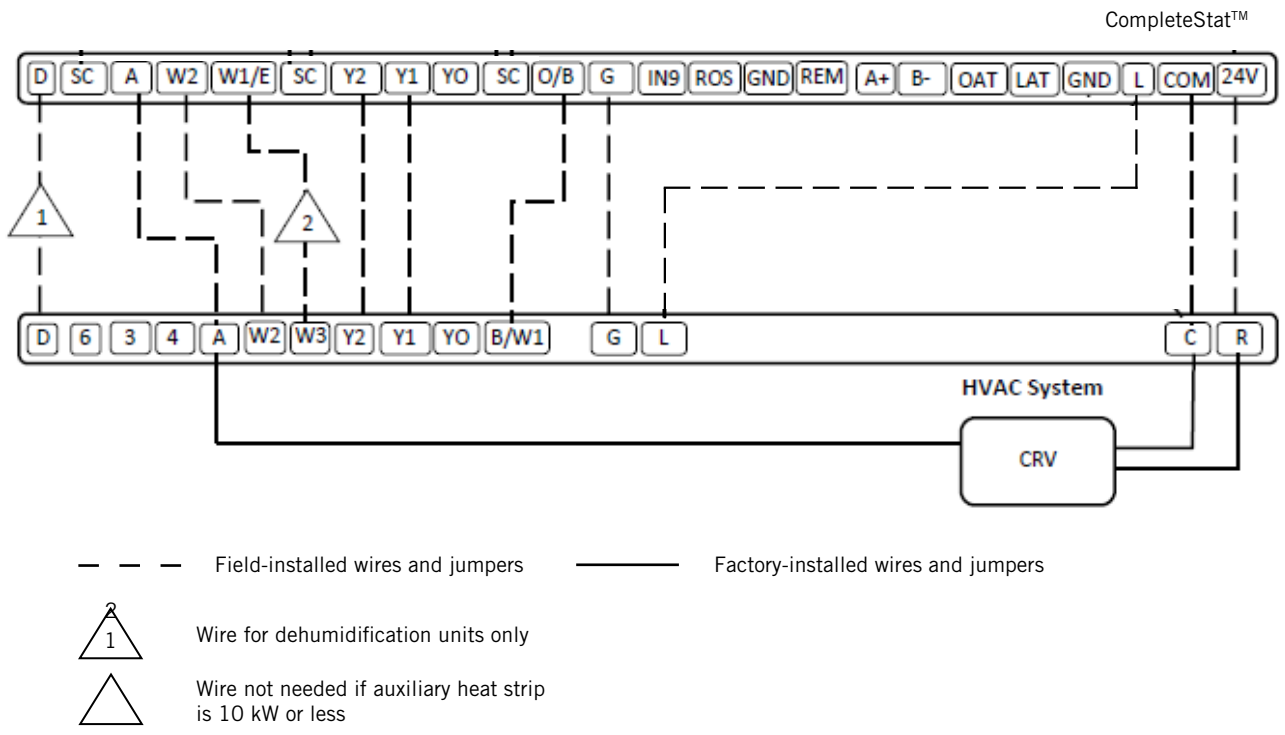
WIRING DIAGRAM 10
I-TEC 2 Stage Heat Pump Series with No Ventilation



- Field-installed wires and jumpers ——— Factory-installed wires and jumpers
- △ 1 Wire for dehumidification units only
- △ 2 Wire not needed if auxiliary heat strip is 10 kW or less

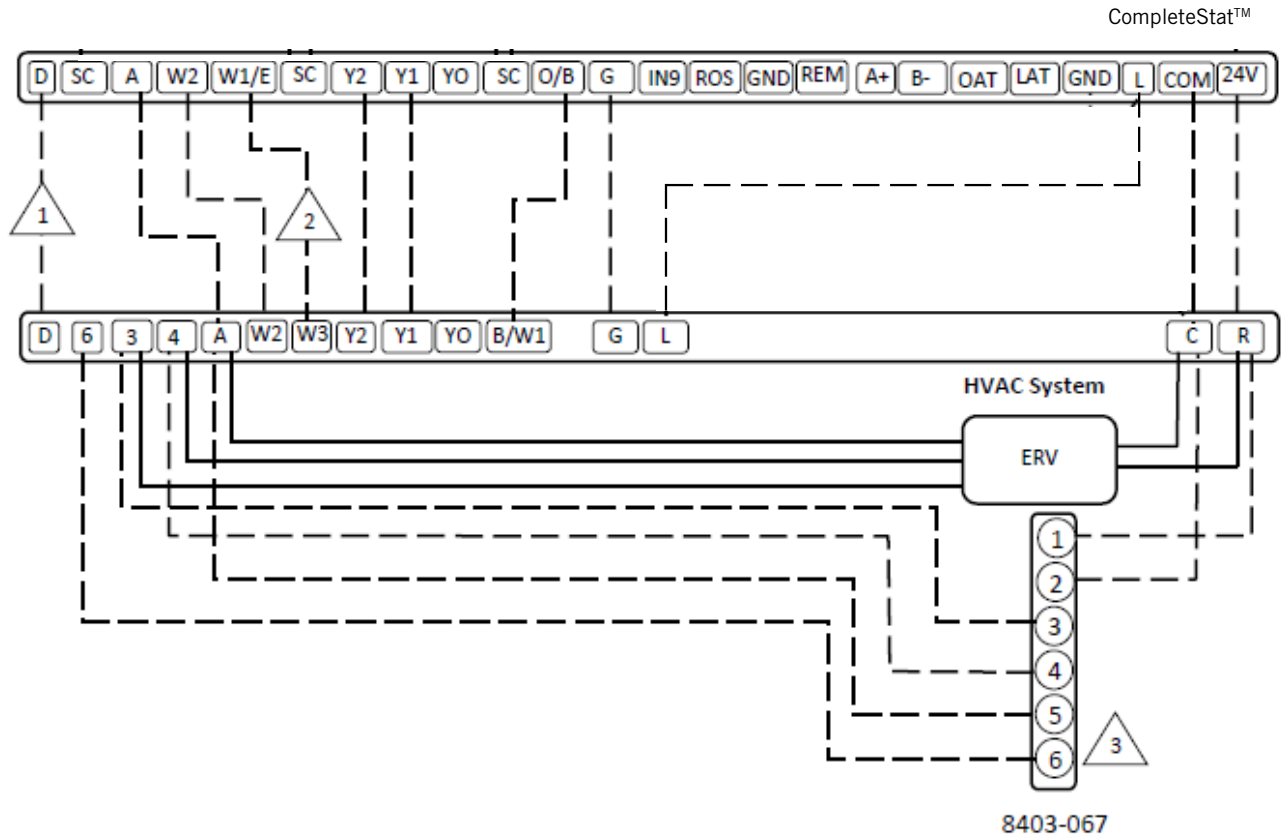
WIRING DIAGRAMS (CONT.)

WIRING DIAGRAM 11
I-TEC 2 Stage Heat Pump Series with CRV Ventilation Package



WIRING DIAGRAM 12

I-TEC 2 Stage Heat Pump Series with ERV Ventilation Package and 8403-067 CO₂ Detector (Fully Modulating)



--- Field-installed wires and jumpers

— Factory-installed wires and jumpers



Wire for dehumidification units only



Wire not needed if auxiliary heat strip is 10 kW or less

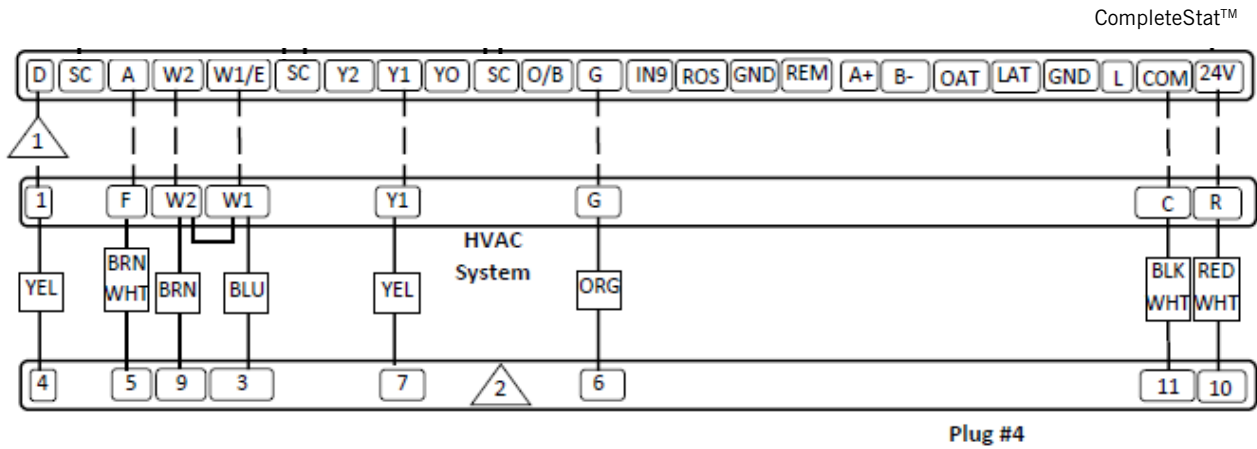


8403-067 to be used with non-CO₂ sensing CompleteStat

WIRING DIAGRAMS (CONT.)

WIRING DIAGRAM 13

Q-TEC QA**/Q**A Series 1 Stage Air Conditioner with or without Dehumidification and Ventilation, No Economizer



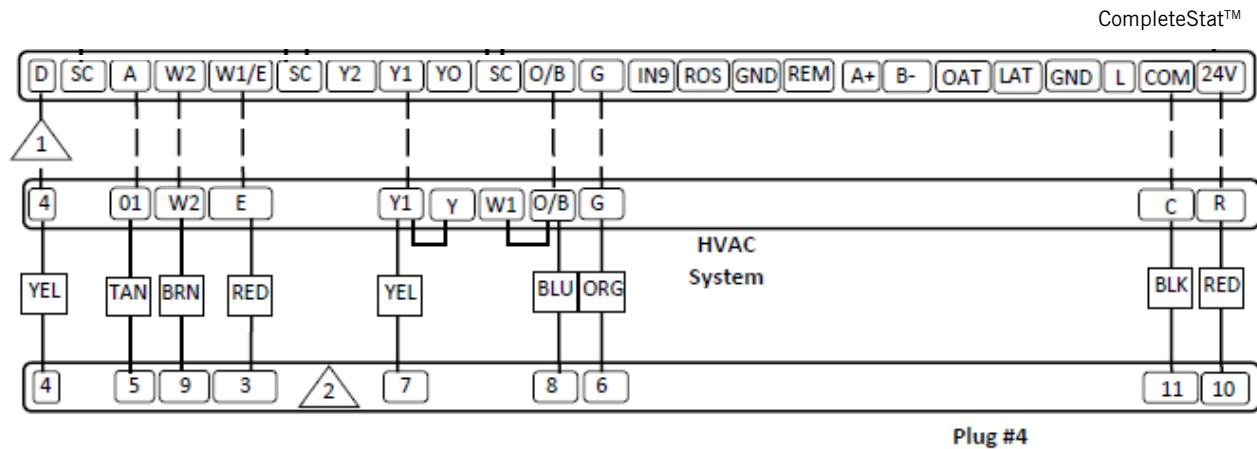
--- Field-installed wires and jumpers ——— Factory-installed wires and jumpers

△ 1 Wire for dehumidification units only

△ 2 Q Series with factory-installed thermostat had no terminal board and were wired directly from Plug #4. Use provided colors to wire CompleteStat.

WIRING DIAGRAM 14

Q-TEC QH**/Q**H Series 1 Stage Heat Pump with or without Dehumidification and Ventilation

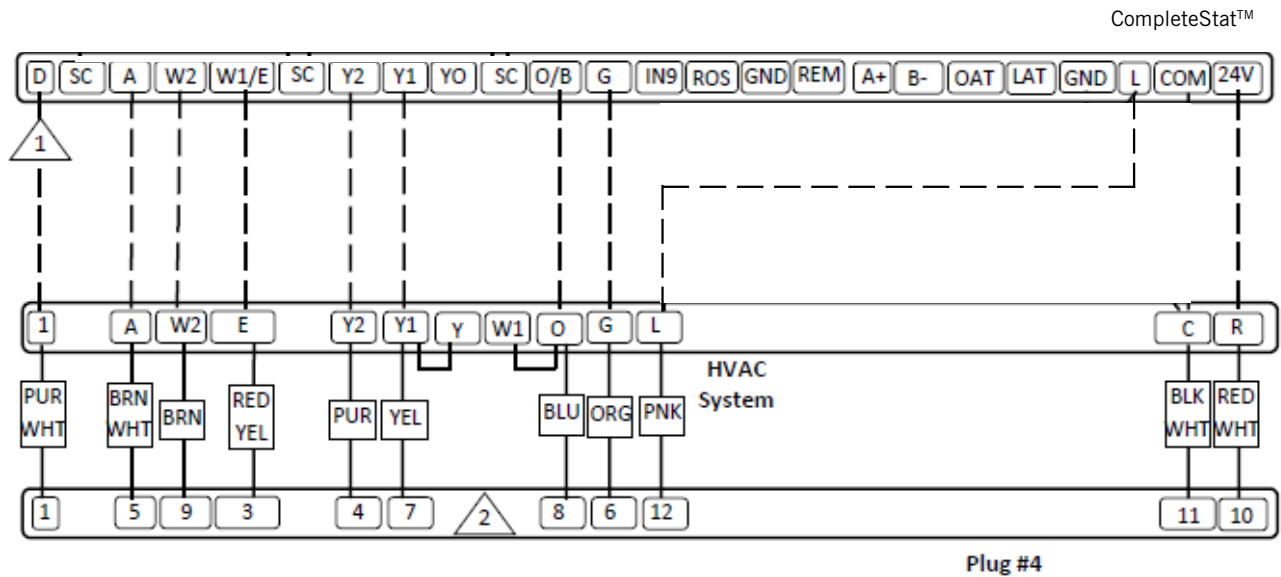


--- Field-installed wires and jumpers ——— Factory-installed wires and jumpers

△ 1 Wire for dehumidification units only

△ 2 Q Series with factory-installed thermostat had no terminal board and were wired directly from Plug #4. Use provided colors to wire CompleteStat.

WIRING DIAGRAM 15
QW*S Series 2 Stage Heat Pump with or without Dehumidification and Ventilation



--- Field-installed wires and jumpers ——— Factory-installed wires and jumpers

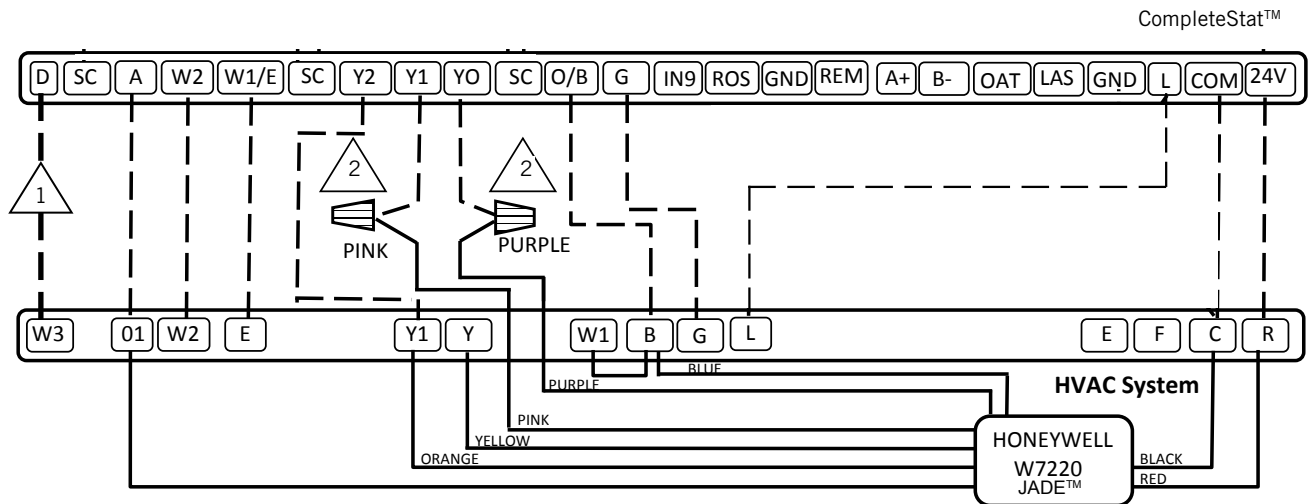


Wire for dehumidification units only



Q Series with factory-installed thermostat had no terminal board and were wired directly from Plug #4. Use provided colors to wire CompleteStat.

WIRING DIAGRAM 16
CH Heat Pump 2 Stage with Honeywell W7220 Jade™ Control Economizer, with or without Dehumidification**



--- Field-installed wires and jumpers ——— Factory-installed wires and jumpers



Wire for dehumidification units only



Field-Installed wire nuts