
INSTALLATION INSTRUCTIONS

CONTROLLER INSTALLATION, OPERATION & QUICK START GUIDE

Bard CompleteStat™

Models:

CS9B-TH0 CS9BE-TH0
CS9B-TH0C CS9BE-TH0C



Bard Manufacturing Company, Inc.
Bryan, Ohio 43506
www.bardhvac.com

Manual: 2100-566F
Supersedes: 2100-566E
Date: 9-1-16

TABLE OF CONTENTS

INSTALLATION	3
Mounting Controller	3
CompleteStat™ Setup Information.....	4
BASIC OPERATION	5
Basic Setup	5
Quick Start Programming	5
System Selection.....	5
Air Conditioner Applications	6
Heat Pump Applications.....	6
System Enable	8
Setpoints.....	8
Sequence of Operation.....	10

FIGURES

Figure 1 CompleteStat™ Buttons and Screens	5
Figure 2 CompleteStat™ Terminal Descriptors and Optional Inputs.....	9

TABLES

Table 1 Controller Connections.....	9
Table 2 Wiring Diagram Index	13

WIRING DIAGRAMS

WD1: Conventional 1H/1C, 1H/2C, 2H/1C or 2H/2C, with or without dehumidification and ventilation	14
WD2: Conventional 1H/1C or 2H/1C with Honeywell W7459A Control Economizer, with or without dehumidification	14
WD3: Conventional 1H/1C or 2H/1C with Honeywell W7220 JADE™ Control Economizer, with or without dehumidification	15
WD4: Conventional 1H/2C or 2H/2C with Honeywell W7459A Control Economizer	15
WD5: Conventional 1H/2C or 2H/2C with Honeywell W7220 JADE™ Control Economizer	16
WD6: Heat Pump 2H/1C or 3H/1C, with or without dehumidification and ventilation.....	16
WD7: Heat Pump 2-Stage, with or without dehumidification and ventilation	17
WD8: Heat Pump 1-Stage, with Honeywell W7459A Control Economizer with or without dehumidification	17
WD9: Heat Pump 1-Stage with Honeywell W7220 JADE™ Control Economizer, with or without dehumidification.....	18
WD10: Heat Pump 2-Stage with Honeywell W7459A Control Economizer, with or without dehumidification	18
WD11: Heat Pump 2-Stage with W7220 JADE™ Control Economizer, with or without dehumidification	19

WD12: Gas/Electric 1H/1C, with or without dehumidification and ventilation	19
WD13: Gas/Electric 1H/2C, with or without dehumidification and ventilation	20
WD14: Gas/Electric 1H/1C, with Honeywell W7459A Control Economizer with or without dehumidification.....	20
WD15: Gas/Electric 1H/2C, with Honeywell W7459A Control Economizer with or without dehumidification.....	21
WD16: I-TEC® 2-Stage Heat Pump Series with no ventilation package	21
WD17: I-TEC® 2-Stage Heat Pump Series with CRV ventilation package.....	22
WD18: I-TEC® 2-Stage Heat Pump Series with ERV ventilation package and 8403-067 CO ₂ Detector (fully modulating).....	22
WD19: Q-TEC™ QA**/Q**A Series 1-Stage Air Conditioner, with or without ventilation and dehumidification	23
WD20: Q-TEC™ QH**/Q**H Series 1-Stage Heat Pump, with or without ventilation and dehumidification	23
WD21: QW*S Series 2-Stage Heat Pump, with or without ventilation and dehumidification...	24
WD22: C**H Heat Pump 2-Stage with W7220 JADE™ Control Economizer, with or without dehumidification	24

INSTALLATION

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. To complete rough-in wiring, it is recommended to use 18 AWG solid-conductor control wiring is used. See the low voltage wiring diagrams beginning on page 14 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 completed 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 (see low voltage wiring diagrams) to terminal blocks.
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.

Models	Dimensions in Inches (mm)		
	A	B	C
CS9B(E)-THO	1.125 (29)	5.551 (141)	4.192 (106)
CS9B(E)-THOC	1.437 (36.5)		5.192 (132)



CompleteStat™ Setup at Time of Installation

Determine the following information prior to installation.

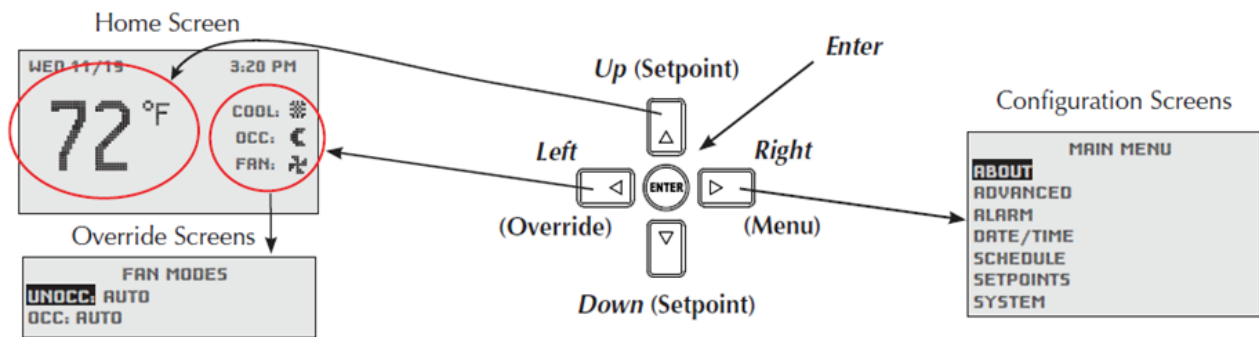
1. Degrees Scale: °F _____ °C _____
2. Unit Type: A/C _____ HP _____
3. Options: A/C – 1H/1C _____ 2H/2C _____ 1H/2C _____ 2H/1C _____
HP – 1 Stage _____ 2 Stage _____
4. Economizer: Yes _____ No _____
5. Fan: Off Delay _____ (seconds) Unoccupied: Auto _____ On _____ Occupied: Auto _____ On _____
6. 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 1
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 **Temperature Setpoints** on page 8 for further information.

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 ADVANCED. Press ENTER button.
3. In the ADVANCED menu screen, press ENTER button to enter the APPLICATION menu.
4. Controller will ask for Admin Level Password. Enter BARD or 1914. Press ENTER button.
5. Press ENTER button to choose DEGREES SCALE (if necessary).

NOTE: The APP category must be set to “NOT CONFIGURED” before the controller will allow the scale to be changed.

6. Press UP or DOWN button to choose °Fahrenheit or °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 APP. 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. This setting does not include ECON as a cooling stage.
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

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

Damper, Fan and Humidity Setup

1. Press DOWN button to scroll to DAMPER. Press ENTER button.
2. 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.
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 (factory default); "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed.
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 ENTER button again to choose DEHUMIDIFICATION.
11. Press ENTER button again to highlight current dehum choice (default is DISABLE).

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 as well as cooling: YES/NO.
 - DEHUM SETPT = Relative Humidity (RH) setpoint: 50% RH to 75% RH, 1% increments.
 - DEHUM SPAN = Amount of RH% removal allowed past setpoint: 5% to 10%, 1% increments.
14. Press ENTER button to save changes.
15. Press LEFT button to return to the home screen. Proceed to **System Enable** on page 8 to continue the setup process.

Heat Pump Applications

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

If the heat pump selection is chosen, electric heat strips 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 ADVANCED. Press ENTER button.
3. In the ADVANCED menu screen, press ENTER button to enter the APPLICATION menu.
4. Controller will ask for Admin Level Password. Enter BARD or 1914. Press ENTER button.
5. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.
6. Press ENTER button again to choose AUX HEAT.
7. Press ENTER button again to highlight current AUX HEAT choices.
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 on page 8).
 - 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 five (5) times to return to 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, 10 minute increments. Press ENTER button to save choice.
 12. Press LEFT button to return to ADDITIONAL 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. To install Bard 8403-061 Outdoor Air Temperature Sensor, attach the leads to terminals "OAT" and "GND". To set the compressor outdoor air temperature from the home screen:

1. Press RIGHT button to access Main Menu screen.
2. Press DOWN button to scroll to ADVANCED. Press ENTER button.
3. In the ADVANCED menu screen, press UP or DOWN button to scroll to LIMITS. Press ENTER button.
4. Press DOWN button to scroll to COMP OAT HTG LOW. Press ENTER button.
5. Press UP or DOWN button to select outdoor air temperature for compressor lockout. Press ENTER to save choice.
6. Press LEFT button to return to ADVANCED menu.

Damper, Fan and Humidity Setup

1. In the ADVANCED menu screen, press ENTER button to enter the APPLICATION menu.
2. Controller will ask for Admin Level Password. Enter BARD or 1914. Press ENTER button.
3. Press DOWN button to scroll to ADDITIONAL SETUP. Press ENTER button.
4. Press DOWN button to scroll to DAMPER. Press ENTER button.
5. 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
6. Press ENTER button to select/save appropriate economizer option.
 7. Press LEFT button to go back to ADDITIONAL SETUP.
 8. 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.
 9. 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 (factory default); "AUTO" = System fan will operate during call for cooling or heating, but will cycle off when no compressor or no heating is needed.
 10. Press ENTER button to save changes to FAN mode selections.
 11. Press LEFT button to go back to ADDITIONAL SETUP.
 12. Press DOWN button to scroll to HUMIDITY. Press ENTER button to enter HUMIDITY SETUP.
 13. Press ENTER button again to choose DEHUMIDIFICATION.
 14. Press ENTER button again to highlight current dehum choice (default is DISABLE).
 15. Press UP or DOWN button to toggle ENABLE/DISABLE. Press ENTER button to select/save choice.
 16. Press DOWN button to scroll through additional DEHUMIDIFICATION screen choices:
 - ALLOW HTG DEHUM = Allows dehumidification in heating as well as cooling: YES/NO.
 - DEHUM SETPT = Relative Humidity (RH) setpoint: 50% RH to 75% RH, 1% increments.

- DEHUM SPAN = Amount of RH% removal allowed past setpoint: 5% to 10%, 1% increments.

17. Press ENTER button to save changes.

Reversing Valve Setup

1. Press LEFT button two (2) times to return to ADDITIONAL SETUP.
2. Press DOWN button to scroll to VALVE. Press ENTER button.
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 four (4) times to return to the home screen.

System Enable

To enable heating or cooling from the home screen:

1. Press RIGHT button to access the Main Menu screen.
2. Press DOWN button to scroll to SYSTEM. Press ENTER button.
3. Press ENTER button to choose from available SYSTEM ENABLE options (use UP or DOWN buttons to scroll through choices):
 - AUTO = System is in “Auto-Changeover” mode. HVAC system will cycle heating and cooling automatically to stay within preset heating and cooling setpoints.
 - HEATING = System is in “Heating-Only” mode. HVAC system will cycle heating in reference to heating setpoint only. Unit will not activate cooling sequence.
 - COOLING = System is in “Cooling-Only” mode. HVAC system will cycle cooling in reference to cooling setpoint only. Unit will not activate heating sequence.
 - EMER HT = HP mode only.
 - OFF = HVAC system is inactive.
4. Press ENTER button to save choice.
5. Press LEFT button two (2) times to return to home screen.

Setpoints

To access setpoints from the home screen:

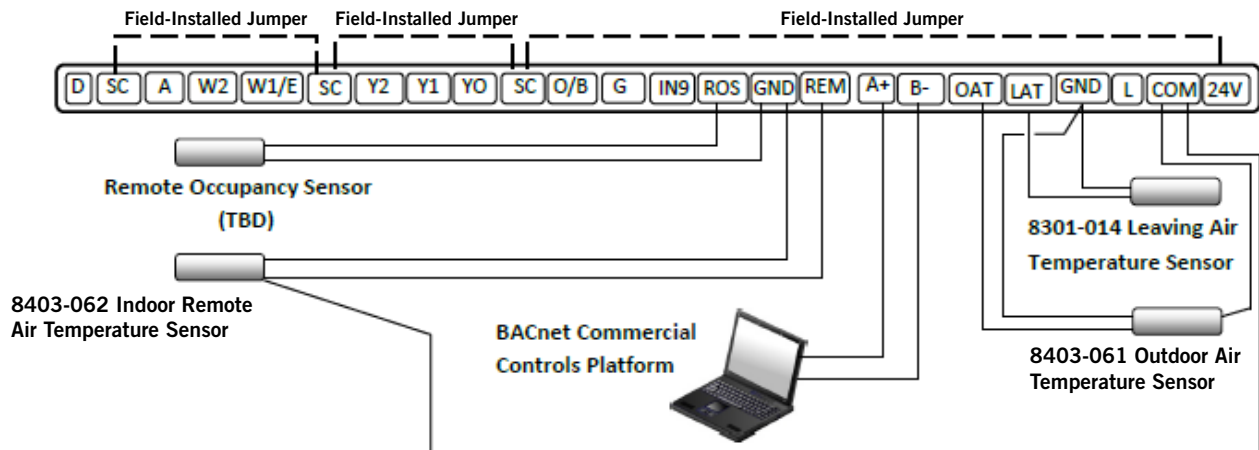
1. Press RIGHT button to access the Main Menu screen.
2. Press DOWN button to scroll to SETPOINTS. Press ENTER button.
3. Press ENTER button to select COOL SETPT.
4. Press UP or DOWN buttons to enter appropriate cooling setpoint. Press ENTER button to save new cooling setpoint.
5. Press ENTER button to select HEAT SETPT.
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 two (2) times to return to 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 the Bard CompleteStat™ Advanced Programming & Features manual P/N 2100-567.

FIGURE 2
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	24VAC to Relay Outputs D, A, W2	Power	
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	24VAC to Relay Outputs W1/E, Y2, Y1	Power	
Y2	2nd Stage Compressor	Output	24VAC SPST Relay
Y1	1st Stage Compressor	Output	24VAC SPST Relay
YO	Economizer	Output	24VAC SPST Relay
SC	24VAC to Relay Outputs YO, O/B, G	Power	
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			
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	Control Ground		
L	Lockout Alarm	Input	Dry Contact (Input to GND)
Com	24VAC Common	Power	
24V	24VAC Hot	Power	

SEQUENCE OF OPERATION

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)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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.

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)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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.

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 ²		
2 nd Stage Heating	X		X			X ³	X ²		
Emergency Heat	X				X	X ³			
Dehumidification								X	
Ventilation ¹	X ¹								X

- ¹ **CS9B(E)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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 Heat/Electric Heat Setup** on page 7).

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 ²		
2 nd Stage Heating	X		X	X			X ²		
3 rd 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)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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 Heat/Electric Heat Setup** on page 7).

SEQUENCE OF OPERATION (CONT.)

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						
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)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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 Heat/Electric Heat Setup** on page 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)-THOC** (CO₂ Sensing Capability) models will activate both **G** and **A** terminals upon a ventilation call; however, the **CS9B(E)-THOC** (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 Heat/Electric Heat Setup** on page 7).

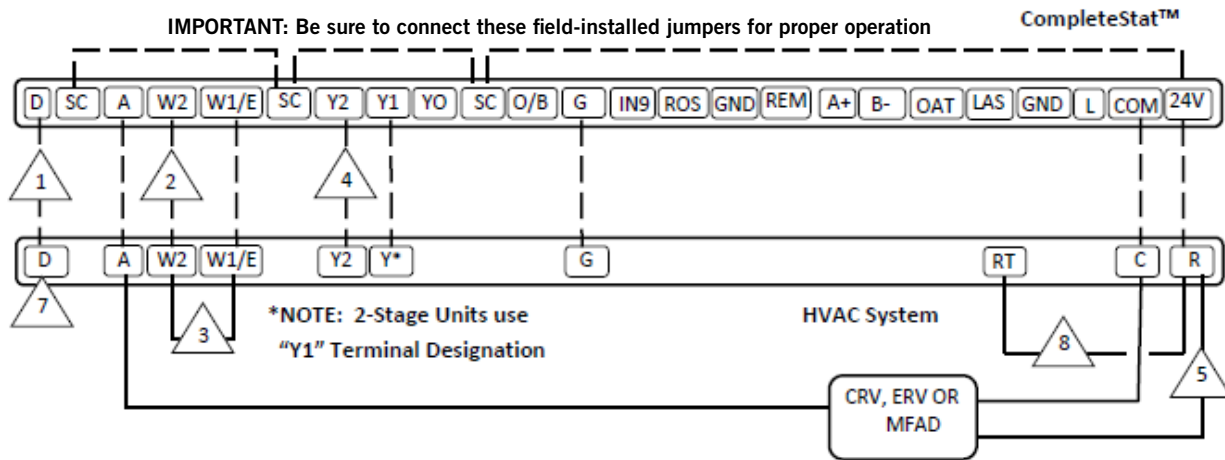
Wiring Diagram Index

Wiring Diagram No.	Unit Type	CompleteStat™ Model CS9B(E)-*	CompleteStat™ System Type	System Stages Setting	Economizer Setting	Use with Bard Units	Ventilation System	Vent Control Type
1	A/C	THO, THOC	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	THO, THOC	A/C	2H/2C	EN/DIS	1-Stage A/C with or w/o Elec. Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
3	A/C	THO, THOC	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
4	A/C	THO, THOC	A/C	2H/2C	EN/DIS	2-Stage A/C with or w/o Elec. Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
5	A/C	THO, THOC	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
6	HP	THO, THOC	HP	1 Stage	None	1-Stage HP with or w/o Elec. Heat	CRV, ERV, MFAD	On/Off
7	HP	THO, THOC	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	CRV, ERV, MFAD	On/Off
8	HP	THO, THOC	HP	1 Stage	EN/DIS	1 & 2-Stage HP with or w/o Elec. Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
9	HP	THO, THOC	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
10	HP	THO, THOC	HP	2 Stage	EN/DIS	2-Stage HP with or w/o Elec. Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
11	HP	THO, THOC	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
12	Gas/Electric	THO, THOC	A/C	1H/1C	None	1-Stage A/C with Gas Heat	CRV, ERV, MFAD	On/Off
13	Gas/Electric	THO, THOC	A/C	1H/2C	None	2-Stage A/C with Gas Heat	CRV, ERV, MFAD	On/Off
14	Gas/Electric	THO, THOC	A/C	1H/1C	EN/DIS	1-Stage A/C with Gas Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
15	Gas/Electric	THO, THOC	A/C	1H/2C	EN/DIS	2-Stage A/C with Gas Heat	EIFM Factory "E" Economizer w/W7459A Control	On/Off
16	I-TEC® HP	THO, THOC	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	None	On/Off
17	I-TEC® HP	THO, THOC	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	CRV	On/Off
18	I-TEC® HP	THO	HP	2 Stage	None	2-Stage HP with or w/o Elec. Heat	Modulating ERV, use -THO plus 8403-067 CO ₂ controller	Modulating
19	Q-TEC™ QA	THO, THOC	A/C	2H/1C	None	1-Stage A/C with or w/o Elec. Heat	CRV, ERV	On/Off
20	Q-TEC™ QH	THO, THOC	HP	1 Stage	None	1-Stage HP with or w/o Elec. Heat	CRV, ERV	On/Off
21	QWS	THO, THOC	HP	2 Stage	None	2-Stage Geo/Water Source HP	CRV, ERV	On/Off
22	C**H	THO, THOC	HP	2 Stage	EN/DIS	2-Stage HP with or w/o Elec. Heat	ECONCH Factory "S" w/JADE W7220 Control	On/Off

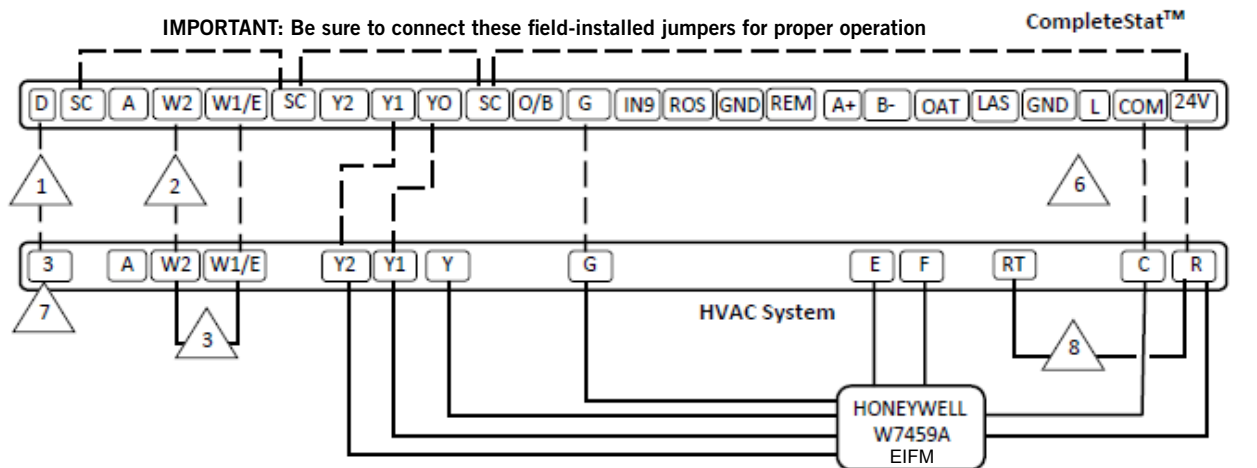
* Either THO or THOC version can be used. For THO, vent output "A" limits vent operation to Occupied periods. For THOC, vent output "A" operates vent based on CO₂ level.











WIRING DIAGRAMS

Wiring Diagram 1: Conventional 1H/1C, 1H/2C, 2H/1C, or 2H/2C, with or without dehumidification and ventilation.

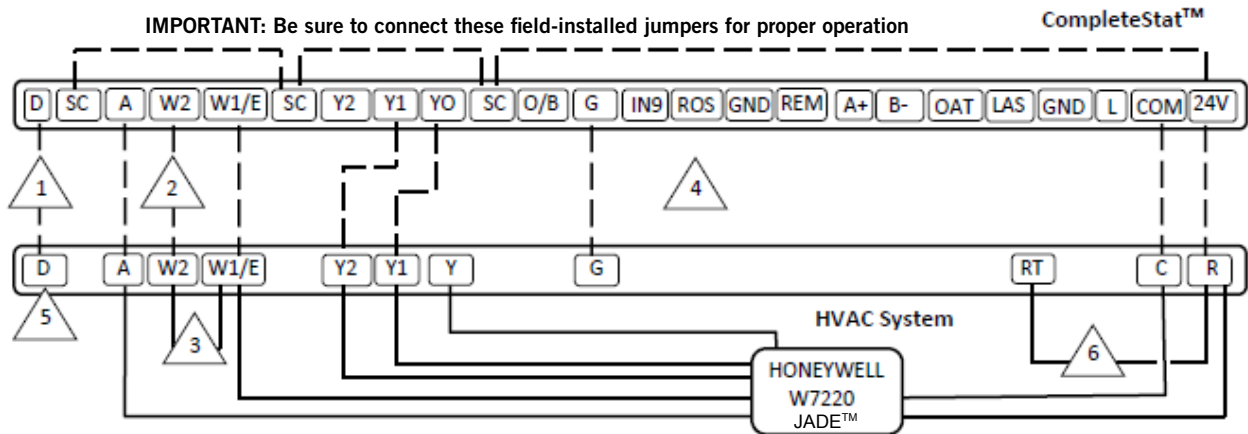


Wiring Diagram 2: Conventional 1H/1C, 2H/1C with Honeywell W7459A Control Economizer, with or w/o dehum.

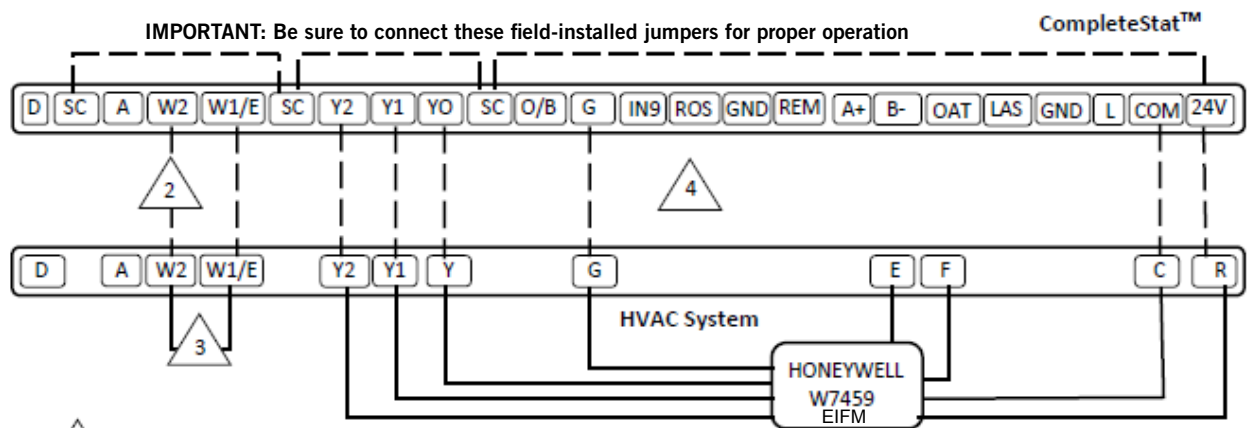


-  Wire for Dehumidification Units Only
-  Opt. Wire only for 2-Stg. Heating (15kW or more)
-  Remove jumper for 2-Stg. heat (15kW or more)
-  Wire only for 2-Stg. Cooling, if available
-  Wire not used on MFAD Ventilation option
-  Field-installed wires and jumpers
-  Factory-installed wires and jumpers
-  CompleteStat programmed for Damper/Economizer: EN/DIS
-  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 3: Conventional 1H/1C, 2H/1C with Honeywell W7220 Jade™ Control Economizer, with or w/o dehum.



Wiring Diagram 4: Conventional 1H/2C, 2H/2C with Honeywell W7459A Control Economizer

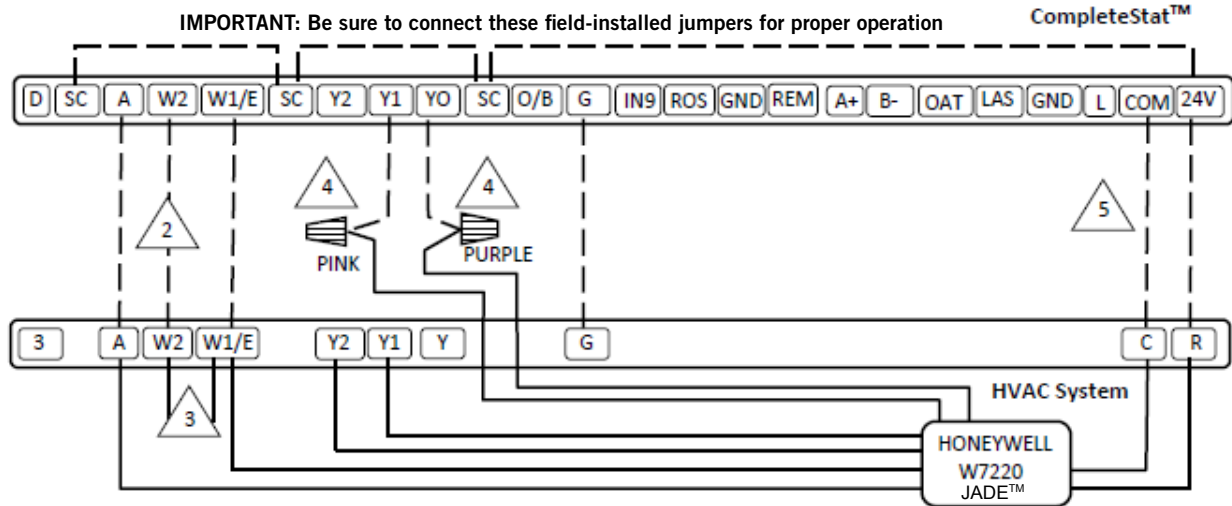


- 1 Wire for Dehumidification Units Only
- 2 Opt. Wire only for 2-Stg. Heating (15kW or more)
- 3 Remove jumper for 2-Stg. heat (15kW or more)
- 4 CompleteStat programmed for Damper/Economizer: EN/DIS
- 5 W**A2 units use "D" Terminal, W**A1 units use "3" Terminal
- 6 For Fire-Smoke/Emergency Shutdown, remove factory jumper and connect NC contacts from field-installed device to terminals "RT" and "R," only offered on single-stage W**A2

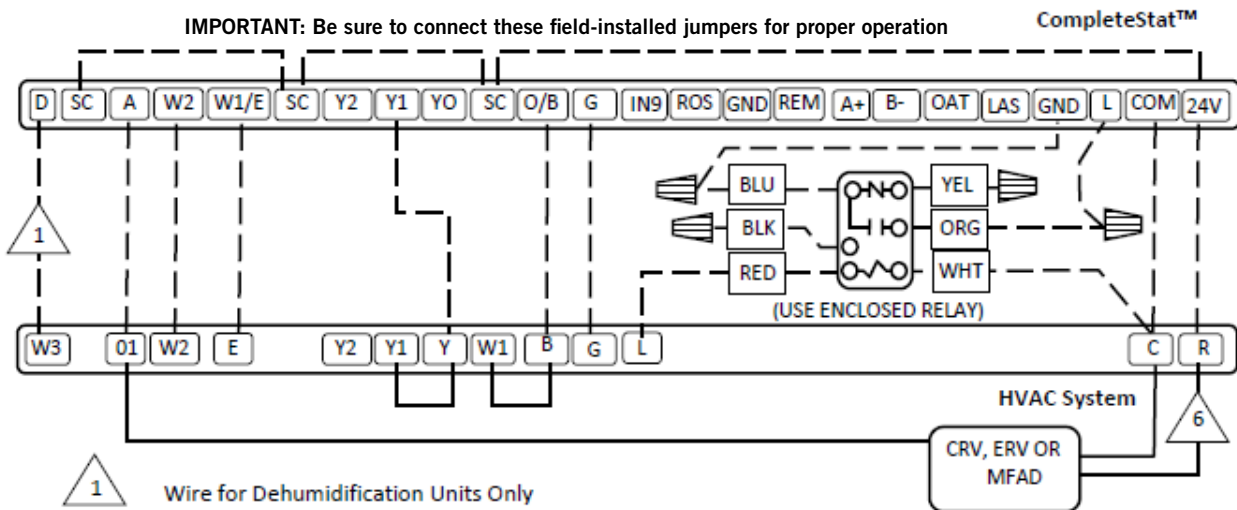
--- Field-installed wires and jumpers
 ——— Factory-installed wires and jumpers

WIRING DIAGRAMS (CONT.)

Wiring Diagram 5: Conventional 1H/2C, 2H/2C with Honeywell W7220 Jade™ Control Economizer



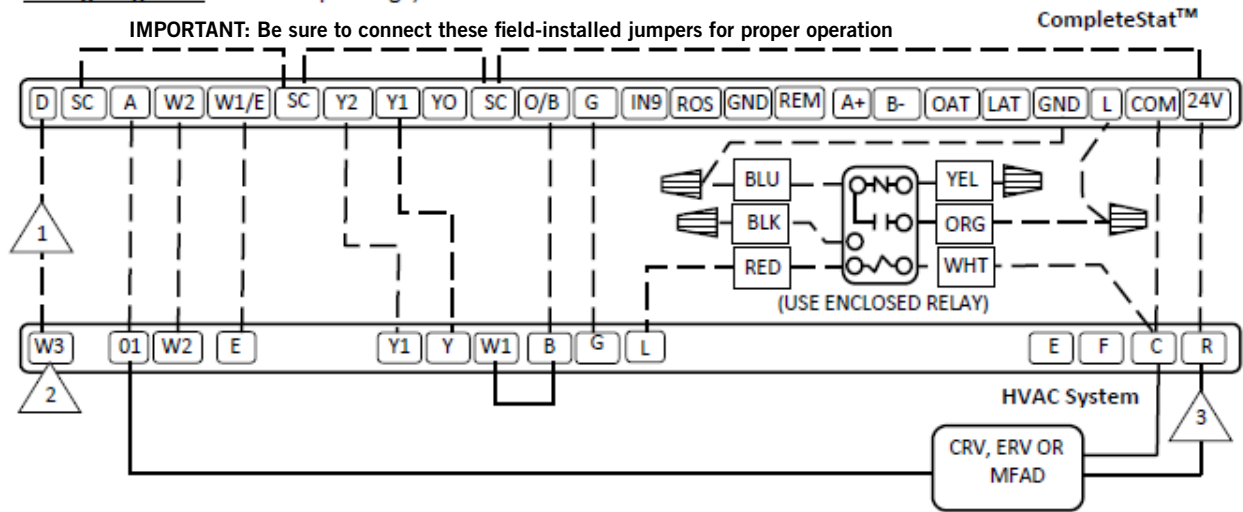
Wiring Diagram 6: Heat Pump 2H/1C, 3H/1C, with or without dehumidification and ventilation.



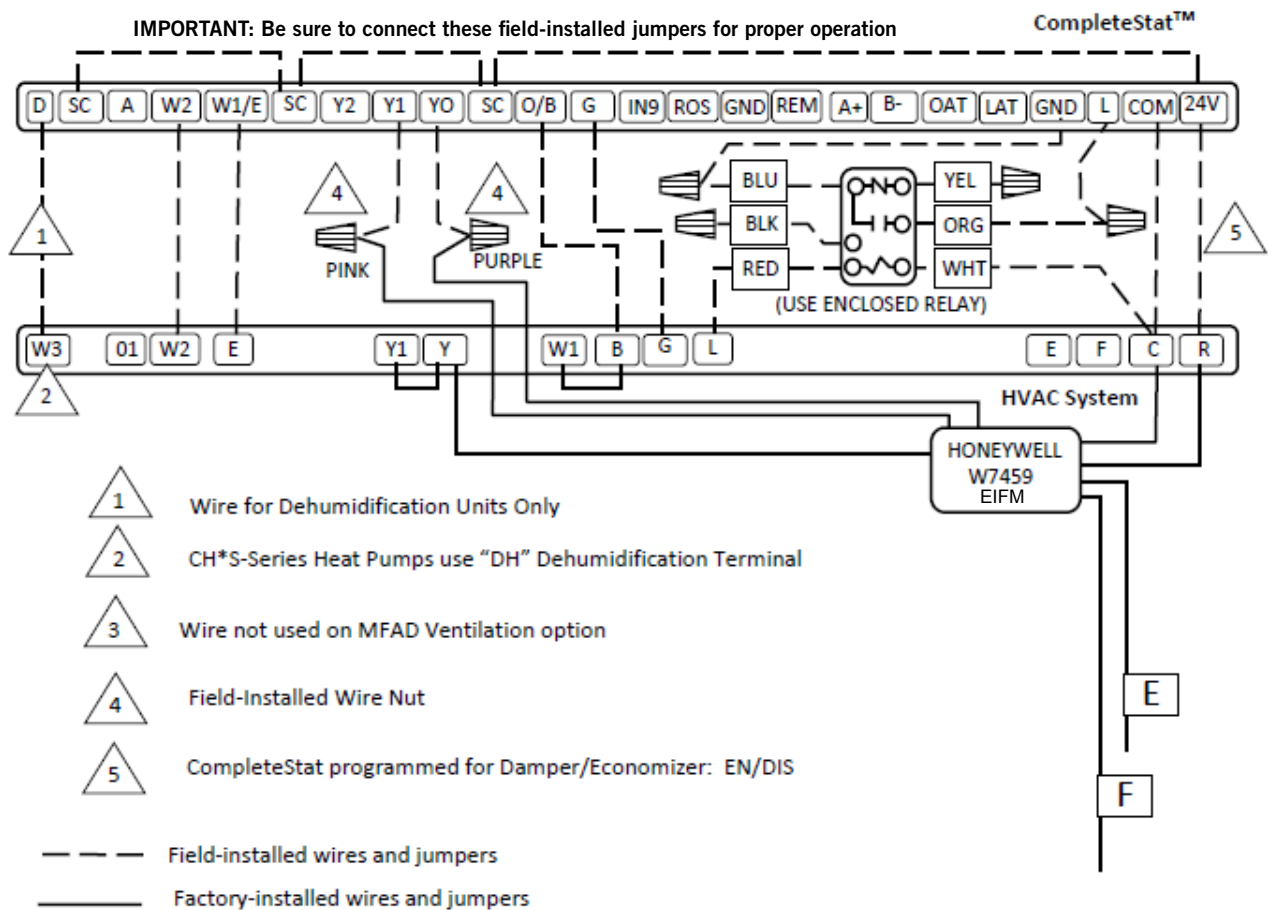
- 1 Wire for Dehumidification Units Only
- 2 Opt. Wire only for 2-Stg. Heating (15kW or more)
- 3 Remove jumper for 2-Stg. Aux. heat (15kW or more)
- 4 Field-Installed Wire Nut
- 5 CompleteStat programmed for Damper/Economizer: En/Dis
- 6 Wire not used on MFAD Ventilation option

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

Wiring Diagram 7: Heat Pump 2-Stage, with or without dehumidification and ventilation.

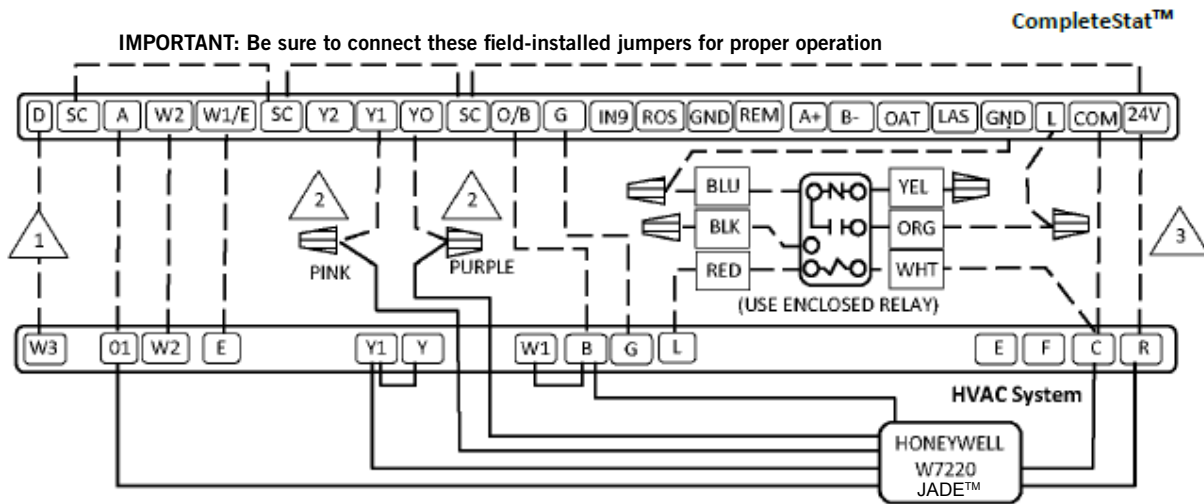


Wiring Diagram 8: Heat Pump 1-Stage, with Honeywell W7459A Control Economizer, with or w/o dehum.

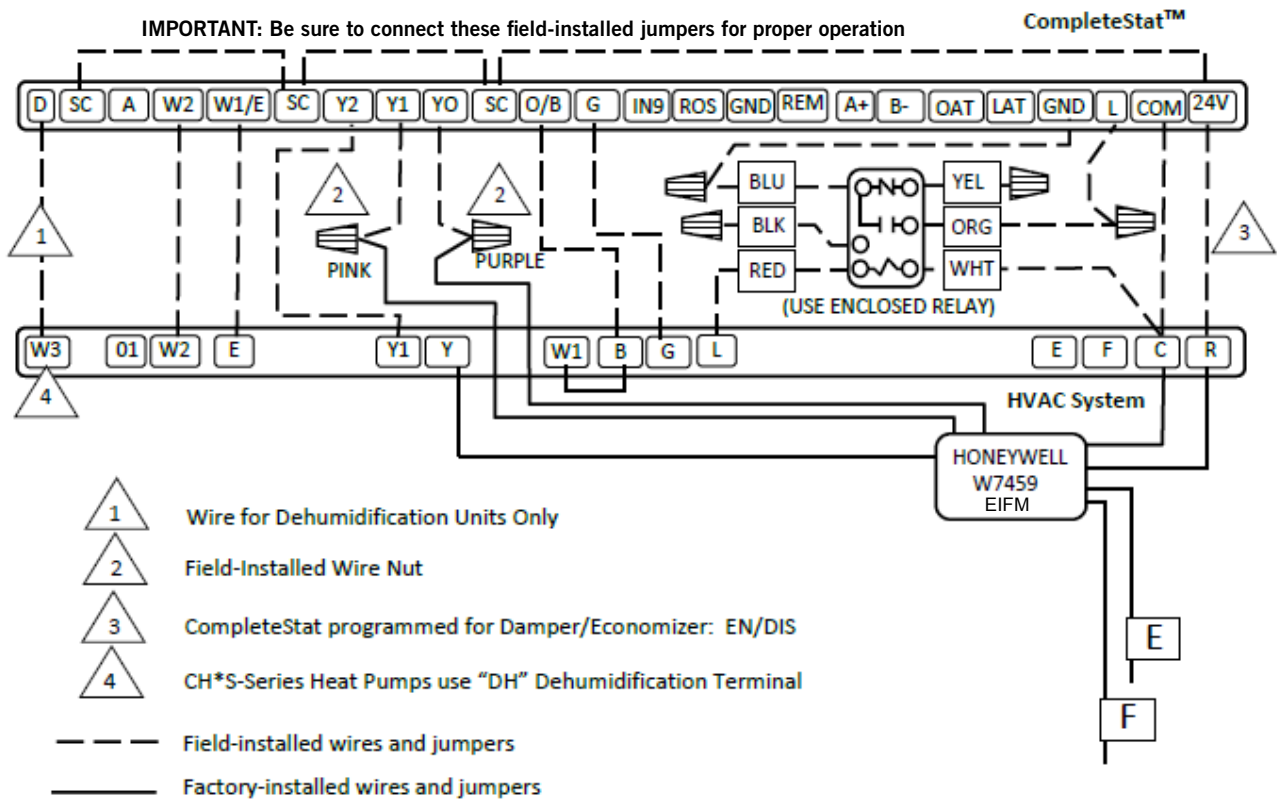


WIRING DIAGRAMS (CONT.)

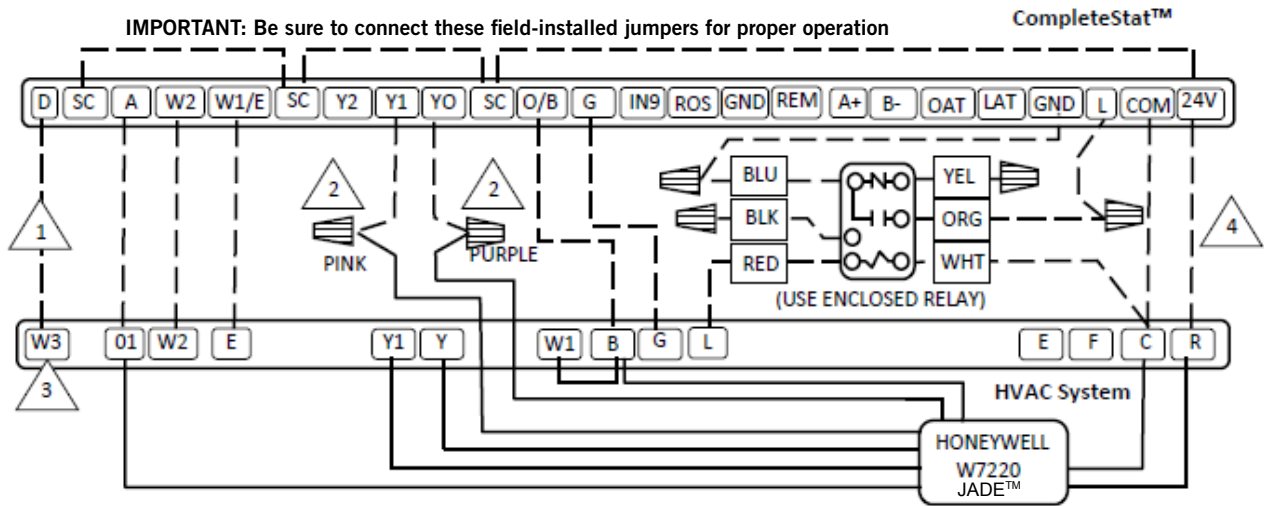
Wiring Diagram 9: Heat Pump 1-Stage, with Honeywell W7220 Jade™ Control Economizer, with or w/o dehum.



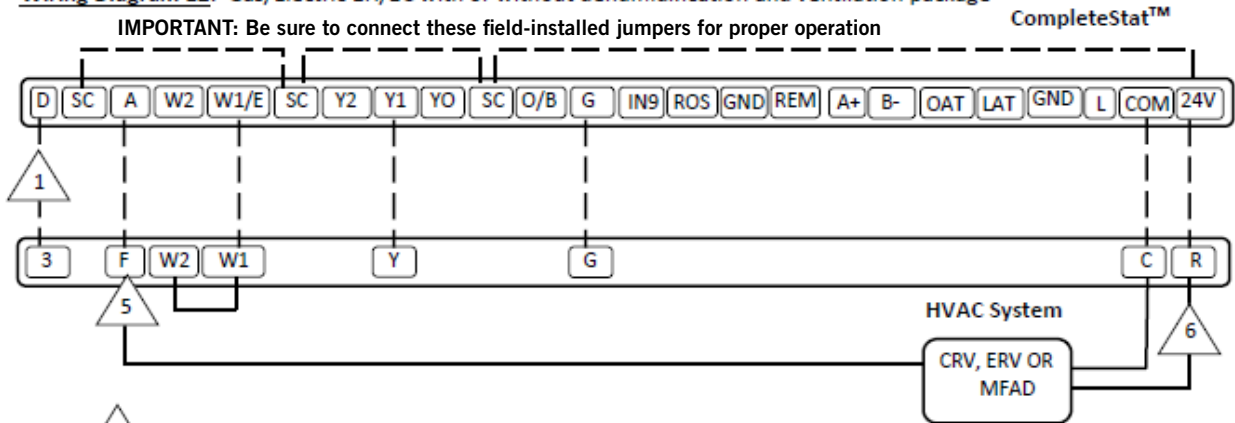
Wiring Diagram 10: Heat Pump 2-Stage, with Honeywell W7459A Control Economizer, with or w/o dehum.



Wiring Diagram 11: Heat Pump 2-Stage, with Honeywell W7220 Jade™ Control Economizer, with or w/o dehum.



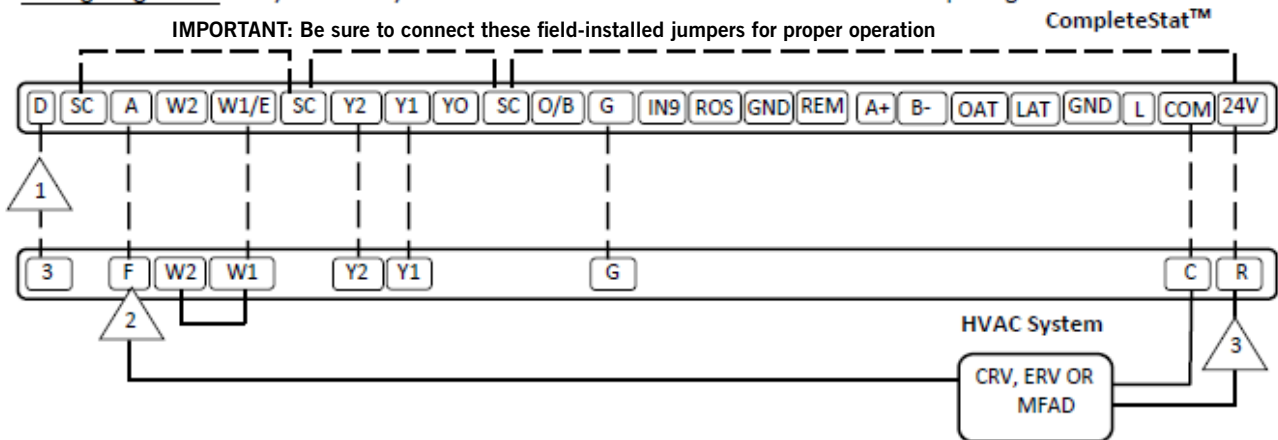
Wiring Diagram 12: Gas/Electric 1H/1C with or without dehumidification and ventilation package



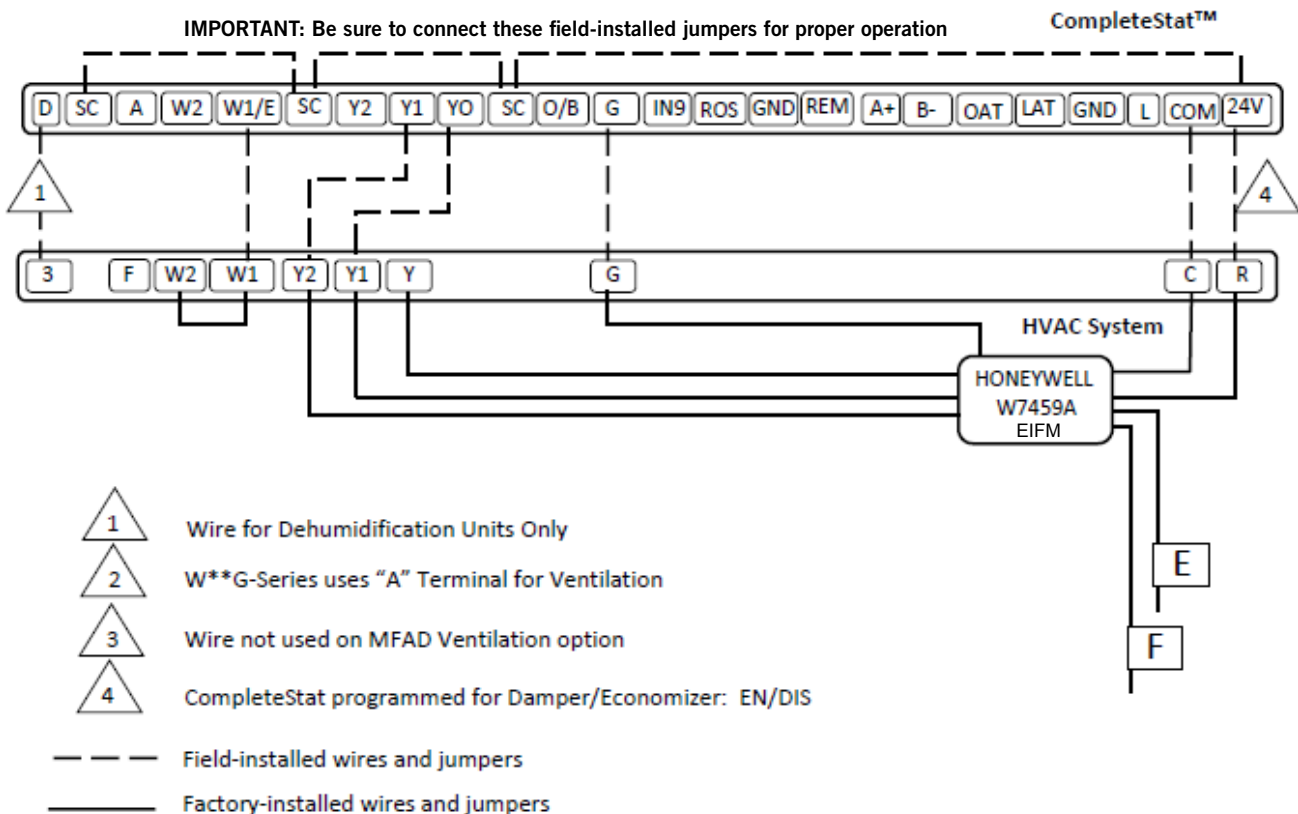
- Wire for Dehumidification Units Only
- Field-Installed Wire Nuts
- CH*S-Series Heat Pumps use "DH" Dehumidification Terminal
- CompleteStat programmed for Damper/Economizer: EN/DIS
- W**G-Series uses "A" Terminal for Ventilation
- Wire not used on MFAD Ventilation option
- Field-installed wires and jumpers
- Factory-installed wires and jumpers

WIRING DIAGRAMS (CONT.)

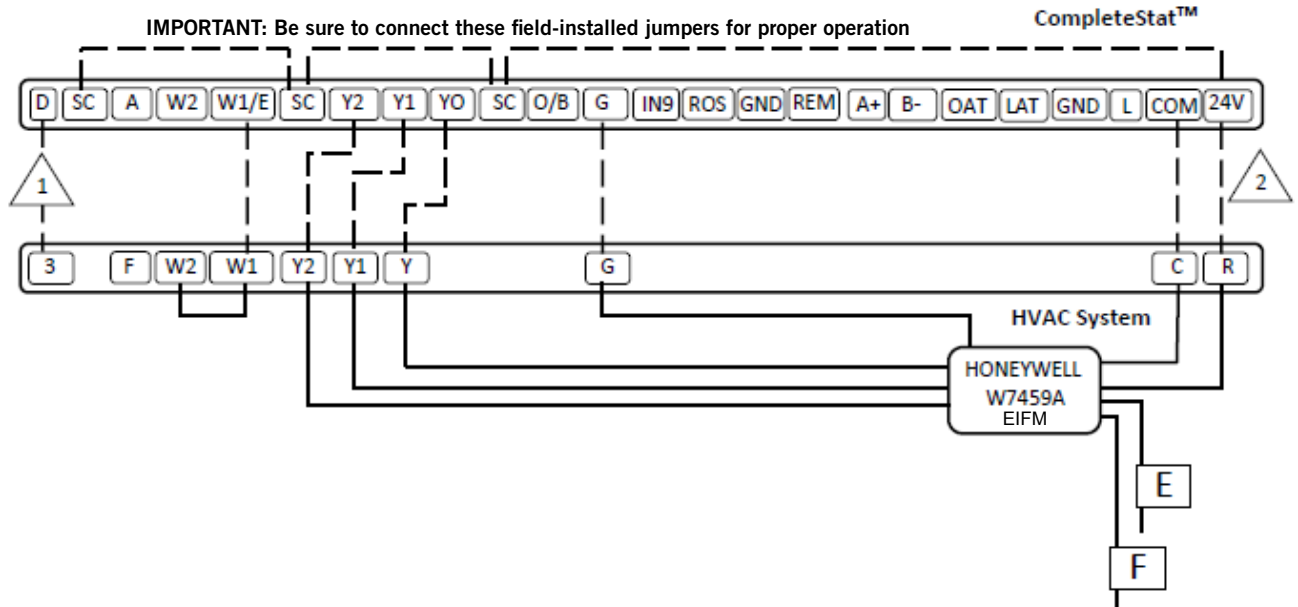
Wiring Diagram 13: Gas/Electric 1H/2C with or without dehumidification and ventilation package



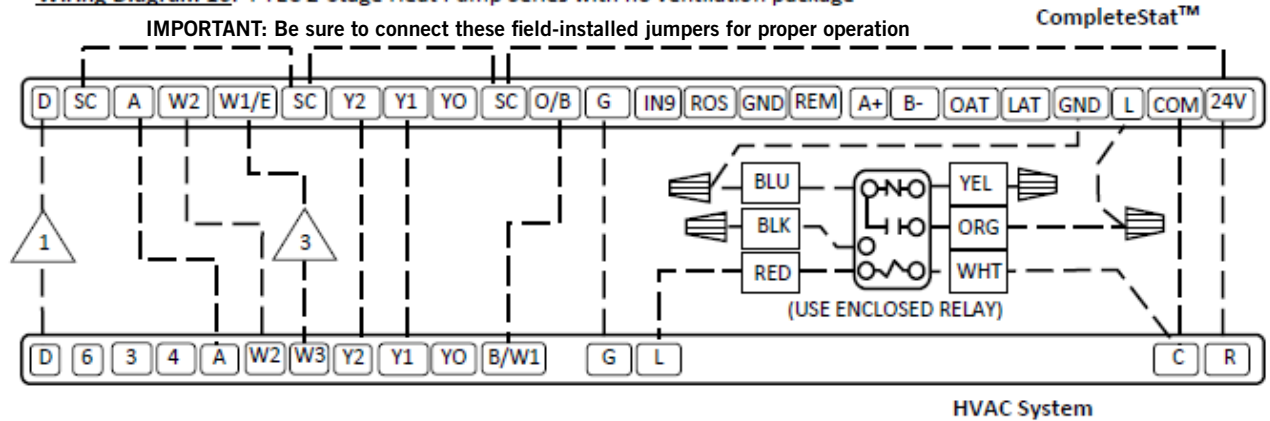
Wiring Diagram 14: Gas/Electric 1H/1C with Honeywell W7459A Control Economizer, with or w/o dehum.



Wiring Diagram 15: Gas/Electric 1H/2C with Honeywell W7459A Control Economizer, with or w/o dehum.



Wiring Diagram 16: I-TEC 2-Stage Heat Pump Series with no ventilation package

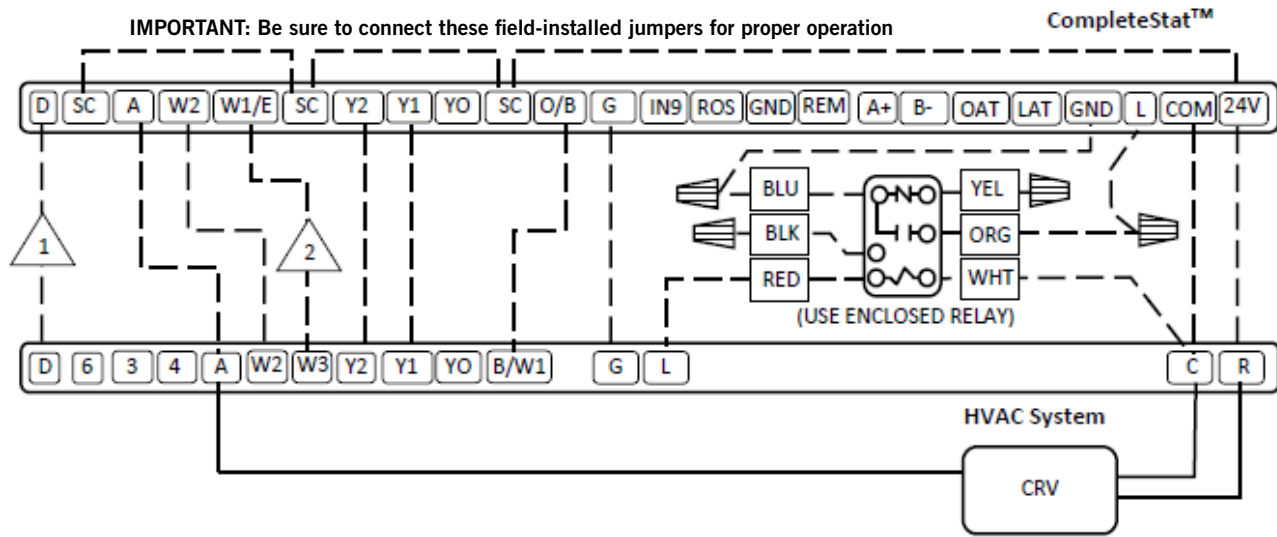


- 1 Wire for Dehumidification Units Only
- 2 CompleteStat programmed for Damper/Economizer: EN/DIS
- 3 Wire not needed if Aux. Heat Strip is 10kW or less

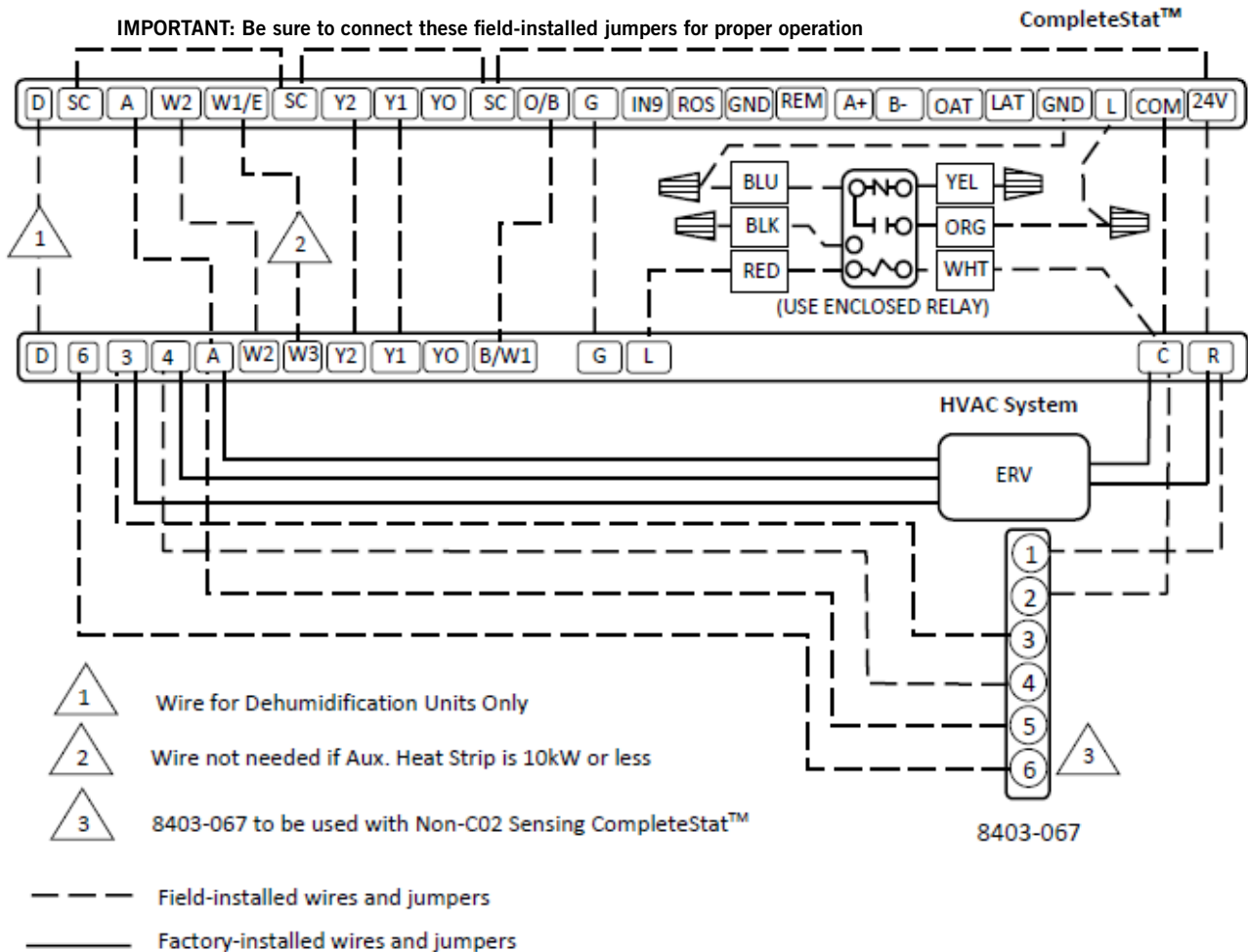
- Field-installed wires and jumpers
- Factory-installed wires and jumpers

WIRING DIAGRAMS (CONT.)

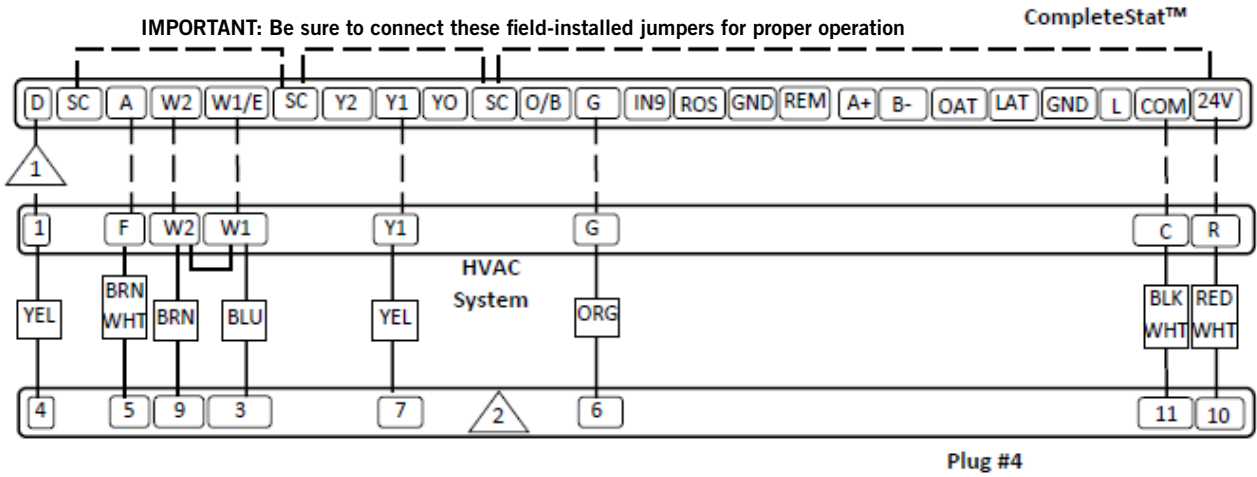
Wiring Diagram 17: I-TEC 2-Stage Heat Pump Series with CRV ventilation package



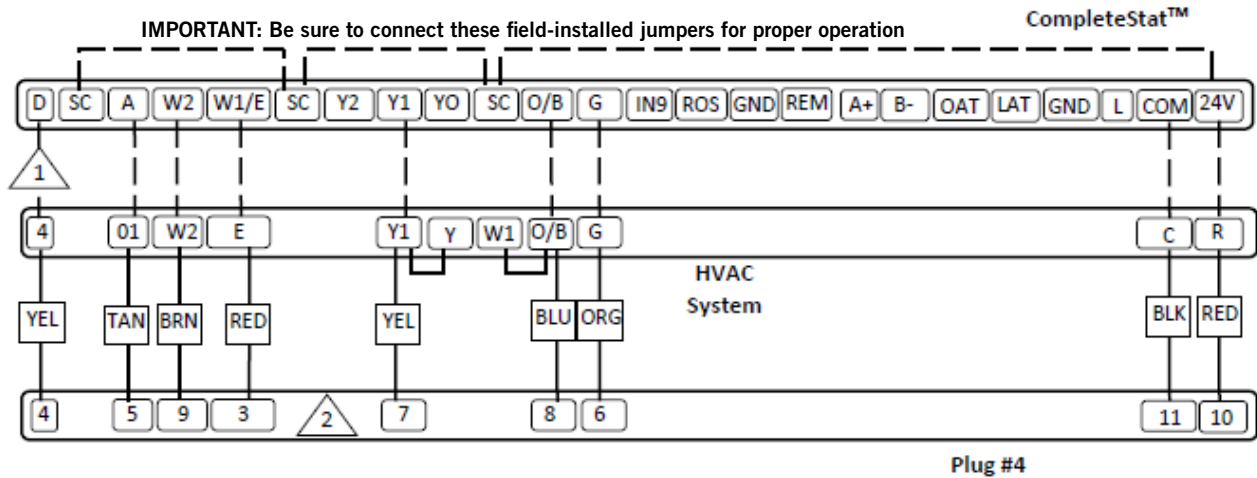
Wiring Diagram 18: I-TEC 2-Stage HP Series with ERV ventilation package & 8403-067 CO₂ Detector (fully modulating)



Wiring Diagram 19: Q-TEC QA**/Q**A-Series 1-Stage Air Conditioners, with or without ventilation and dehumidification



Wiring Diagram 20: Q-TEC QH**/Q**H Series 1-Stage Heat Pump, with or without ventilation and dehumidification



Wire for Dehumidification Units Only



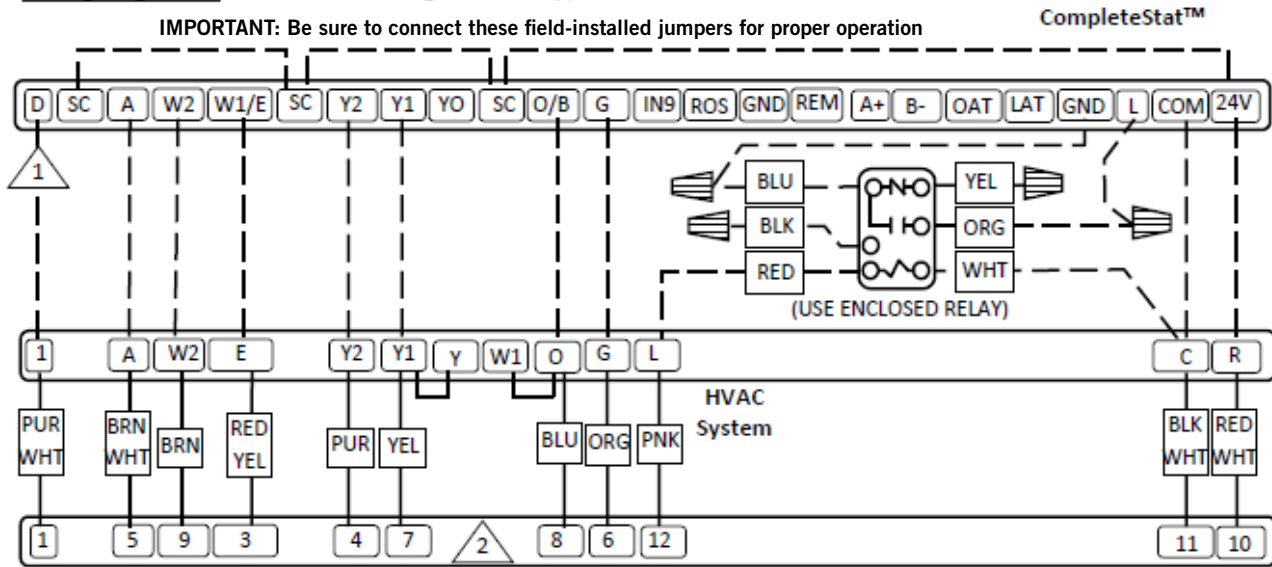
Q-Series with factory installed thermostat had no terminal board and were wired directly from Plug#4. Use provided colors to wire CompleteStat™

--- Field-installed wires and jumpers

— Factory-installed wires and jumpers

WIRING DIAGRAMS (CONT.)

Wiring Diagram 21: QW*S-Series 2-Stage Heat Pump, with or without ventilation and dehumidification

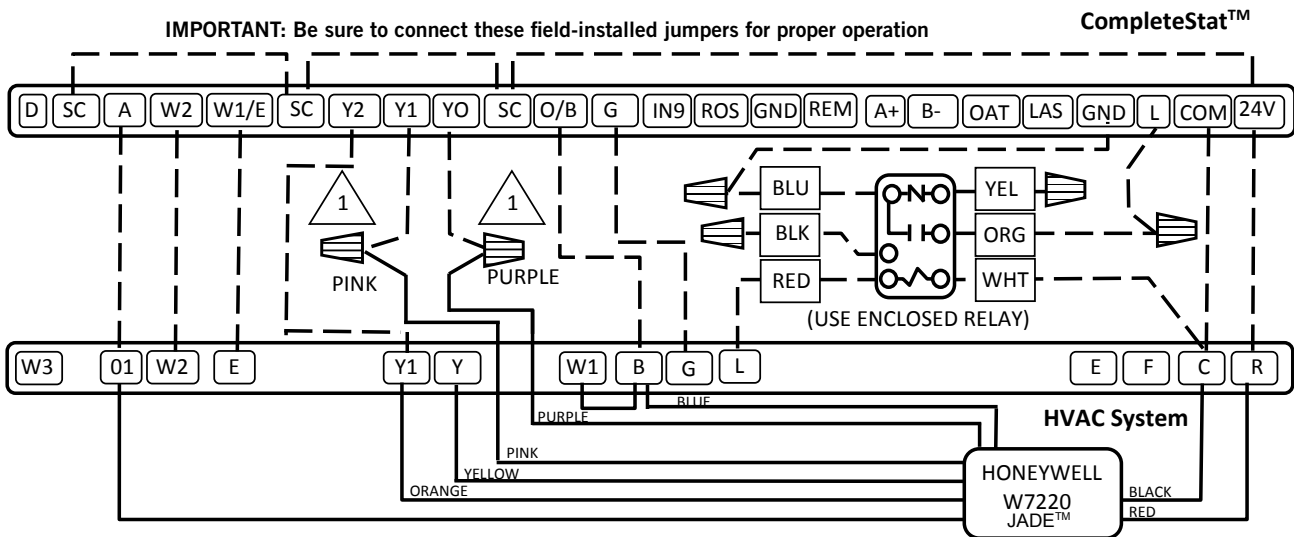


Plug #4

- 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™

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

Wiring Diagram 22: C**H Heat Pump 2-Stage, with Honeywell W7220 Jade™ Control Economizer, with or w/o dehum.



- Field-Installed Wire Nuts
- Field-installed wires and jumpers
- Factory-installed wires and jumpers