

Single Stage Integrated Furnace Controls

50A55-843 for 120 Volt Hot Surface Ignitors and PSC
Blowers

50A65-843 for 80 Volt Hot Surface Ignitors and PSC
Blowers

Business and Product Overview

White-Rodgers Offers Four Universal Single Stage IFCs

50A55-843

- 120V Hot Surface Ignition
- Single Stage Heat
- PSC Blower



130+ Cross-references

50A65-843

- 80V Hot Surface Ignition
- Single Stage Heat
- PSC Blower



35+ Cross-references

50M56U-843

- 120V Hot Surface Ignition
- Single Stage Heat
- PSC Blower
- Ignitor included



430+ Cross-references

50X57-843

- 120V Hot Surface Ignition
- Single Stage Heat
- ECMx (X-13) Blower

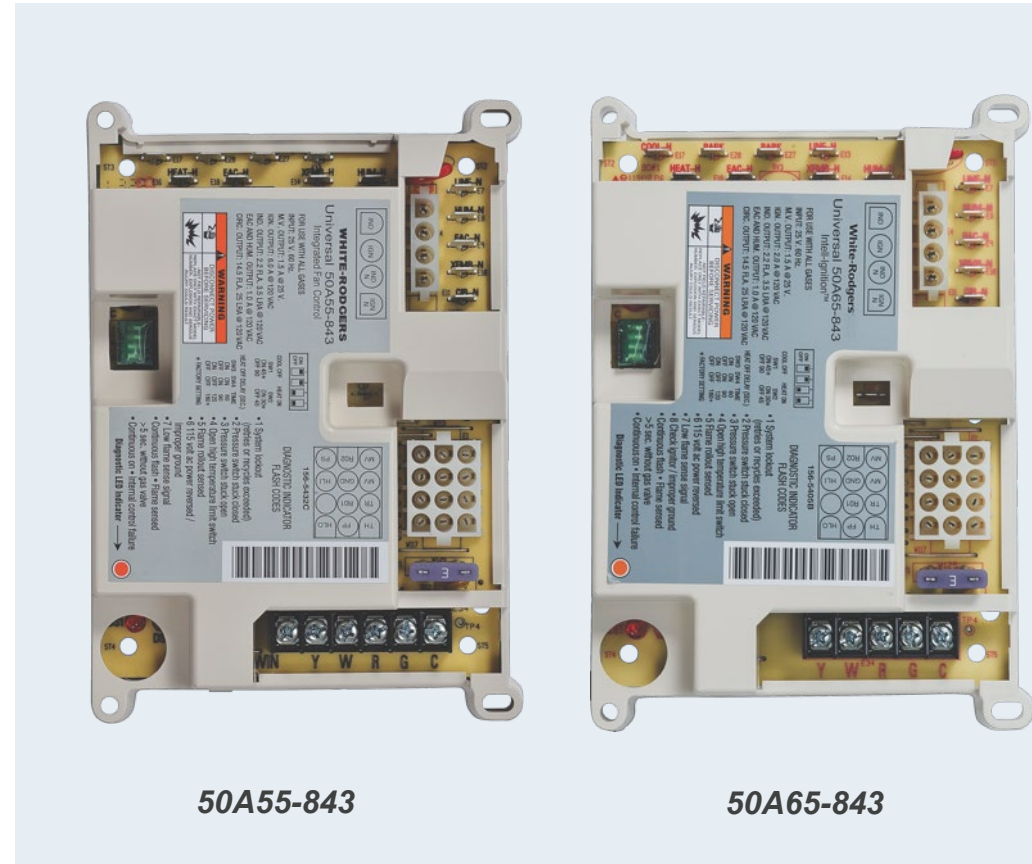


35+ Cross-references

50A55-843 and 50A65-843 Key Features

The 50A55-843 and 50A65-843 IFC's are designed for furnaces with single stage PSC blower motors

- Two universal models replace over 160 models in the field
- Each model features multiple mounting options, LED fault indicators and dipswitch controlled fan timings
- 50A55-843 is compatible with 120V hot surface ignitors
- 50A65-843 is compatible with 80V hot surface ignitors

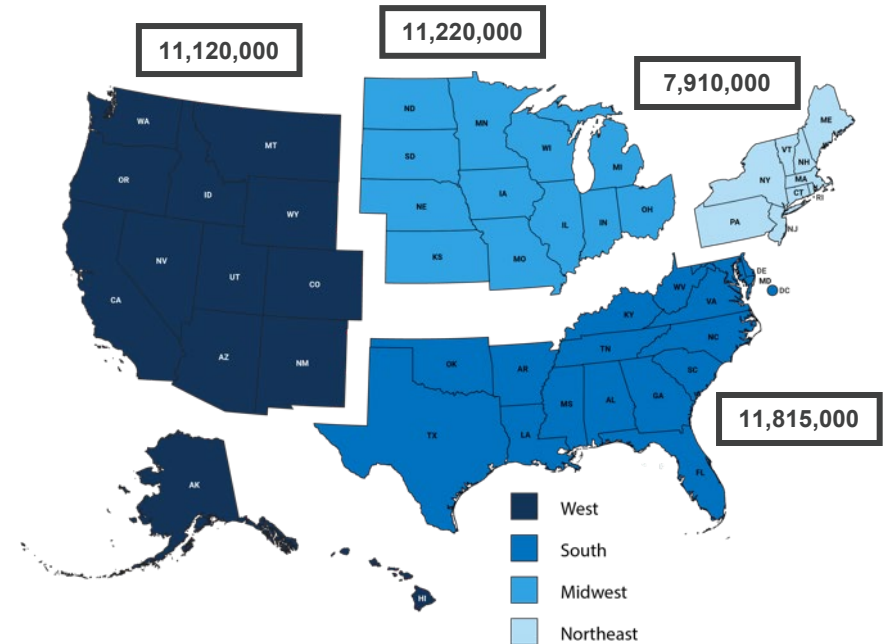


Market

The US market for single stage gas furnace applications offers a huge opportunity for control replacements.

50A55-843 and 50A65-843 models target high volume older furnaces using single stage PSC motors and 120V or 80V hot surface ignitors.

Single Stage Homes Total: **42,065,000**

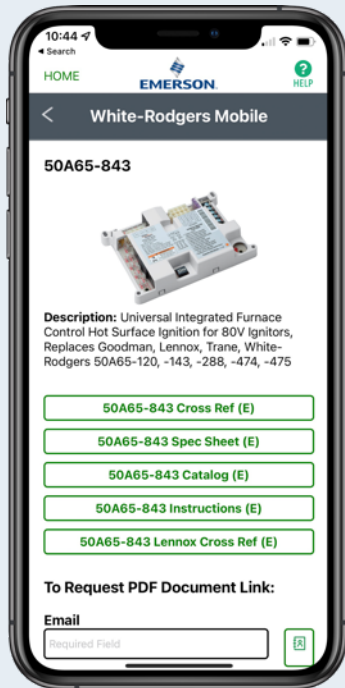


*40 million** single stage gas furnaces were installed in the last twenty years in the US, so the replacement market for these controls should be strong, wherever you are.

50A65-843 Cross-Reference


Cross-Reference


1. Download WR Mobile for most complete and up-to-date cross reference
2. Check the cross-reference list on the side of the box



White-Rodgers™
Integrated Furnace Control
50A65-843


Single Stage Applications
PSC Blower Motor
80V HSI Ignition





Trusted by **PROs**

1-Year Limited Warranty



Cross Reference Replacement / Tableau de renvoi des remplacements

Dayton/WW Grainger	Thermo Products	White-Rodgers
4DG57	350836	50A65-120
Goodman	Trane	50A65-121
10207717	CNT03076	50A65-143
102077-17	CNT03742	50A65-288
PCBBF118S	CNT03798	50A65-474
Lennox	CNT05164	50A65-475
10M93	CNT05165	50A65-476
10M9301	D341213P01	50A65-843
12L69	D341396P01	50A65-5165
12L6901	D341396P03	
32M88	D341396P04	
32M8801	D341396P05	
56L84	X13120667010	
56L8401		

Features and Benefits

Feature	Function	Benefit
Universal design	Saves inventory space – multiple boards replaced by choosing either the 80V or 120V ignitor voltage	Minimizes truck stock
Extra motor/park terminals	Provides safe landing for extra motor lead wires without having to cut off connectors and seal wire ends	Gives technician quick way to secure extra wires
Electronic air cleaner connection	Powers EAC when fan comes on	Saves time installation time
Humidifier connections	Powers Humidifier on heat call	Saves time installation time
Status & fault LED indicator	Pinpoints system issues during installation or service	Allows rapid troubleshooting to resolve component or connection issues
Mounting hole template included	Assures quick and accurate fitment	Saves installation time



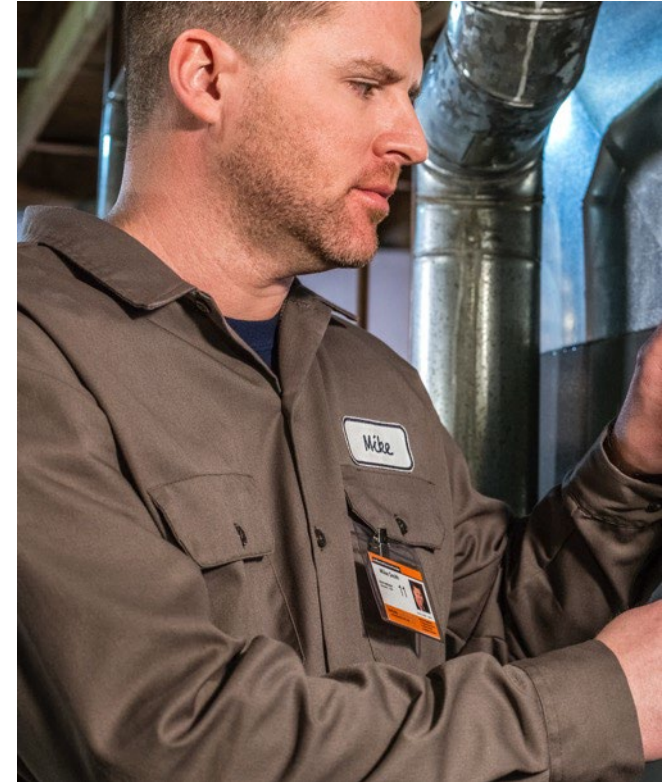
50A55-843



50A65-843

What Our Customers are Saying About White-Rodgers Universal Single Stage IFCs

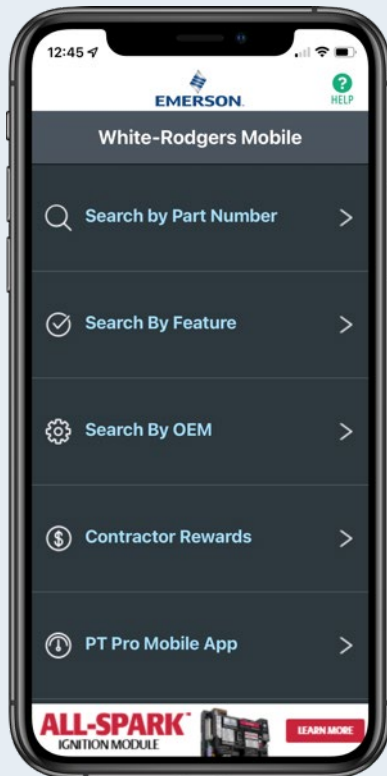
- March 11, 2019
 - *“Thanks guys! Worked great with easy installation for me.”*
- November 26, 2013
 - *“I keep this on my service truck instead of 20+ different OEM boards. Fits a lot of different makes and models of furnaces.”*
- January 16, 2022
 - *“The product was installed and works perfectly. So far I am very satisfied.”*
- February 8, 2020
 - *“Easy to install and tech service on the phone is very helpful.”*
- October 10, 2012
 - *Works great. I installed it tonight and it is working like a charm.*



WR Mobile App

Always up-to-date and easy to use:

- Mobile App
- White-Rodgers Website



Your resource for:

- Product information and spec sheets
- Complete Cross Reference
- OEM compatibility
- Installation information and videos
- Wiring diagrams

Download:

- Go to your app store
- Type in **WR Mobile**
- Install the app



OR

- Open your camera
- Hold it over the QR code
- Tap “Open” on the pop-down
- Install the app



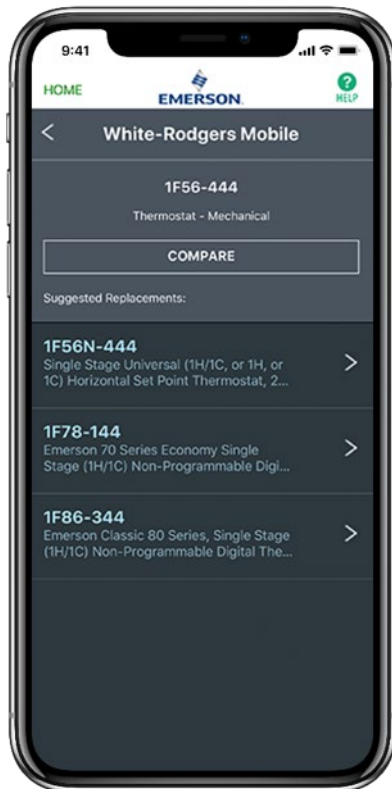
WR Mobile App

Easy to use!

Search by OEM, Competitive, or White-Rodgers Model Number



Product Number

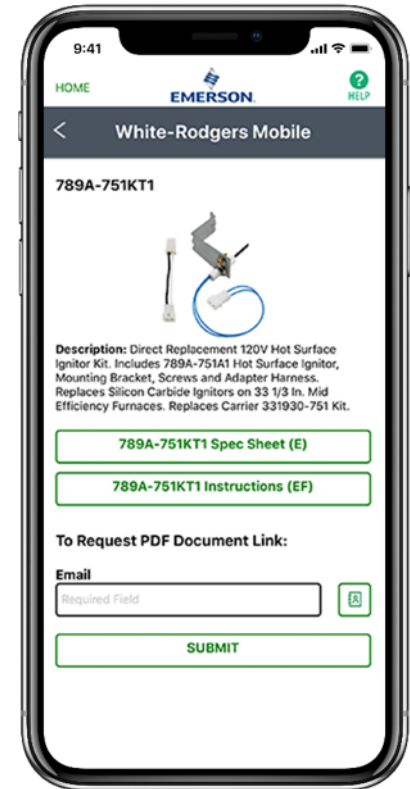


Scrollable Product List



50A55-843 & 50A65-843 Universal IFCs

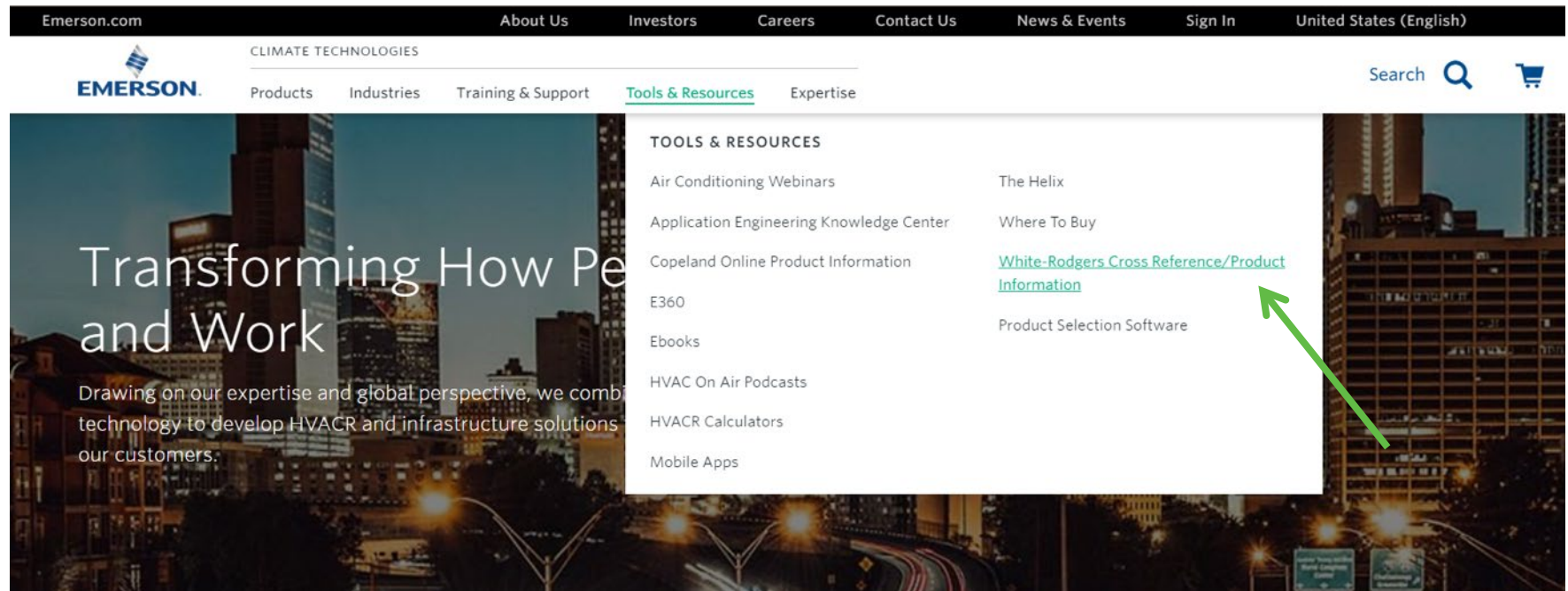
WR Replacement



White-Rodgers Cross Reference

Go to: www.whiterodgers.com

- Hover over Tools & Resources
- Click on: White-Rodgers Cross Reference/Product Information
- Enter the Model Number or click on: Search Replacement Heating Controls by Major OEM Brand



The screenshot displays the Emerson website's navigation menu. The top navigation bar includes links for Emerson.com, About Us, Investors, Careers, Contact Us, News & Events, Sign In, and United States (English). Below this, the 'CLIMATE TECHNOLOGIES' section features a main menu with 'Products', 'Industries', 'Training & Support', 'Tools & Resources', and 'Expertise'. The 'Tools & Resources' dropdown menu is open, listing various resources such as 'Air Conditioning Webinars', 'Application Engineering Knowledge Center', 'Copeland Online Product Information', 'E360', 'Ebooks', 'HVAC On Air Podcasts', 'HVACR Calculators', and 'Mobile Apps'. A green arrow points to the link 'White-Rodgers Cross Reference/Product Information' within this dropdown menu. The background of the website shows a cityscape at night with the text 'Transforming How People and Work' and a sub-headline about developing HVACR and infrastructure solutions.

Why Contractors Trust White-Rodgers

Industry Leading Products

- Used by more OEM's
- Offering the widest range of Universal Replacement Controls

Ease of Installation

- Simple, easy to understand instructions

Product Reliability

- Quality Control assures reliable products

Affordable

- Competitive pricing

Supported by Knowledgeable Representatives

- Contractor direct phone support



Technical

IFC History

1935

- An electric fan to distribute the heated air through ductwork of a coal fired furnace within the home is patented.
- Mechanical temperature switches are used to control when the blower turns on/off.

1968

- An Intermittent Spark ignition system is introduced to replace Standing Pilot Systems.



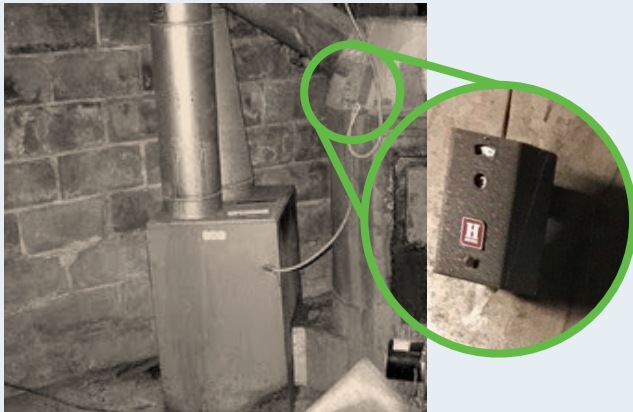
1988

- A Furnace Blower Control using a microprocessor to time the fan blower on & off instead of a temperature sensing control is patented.

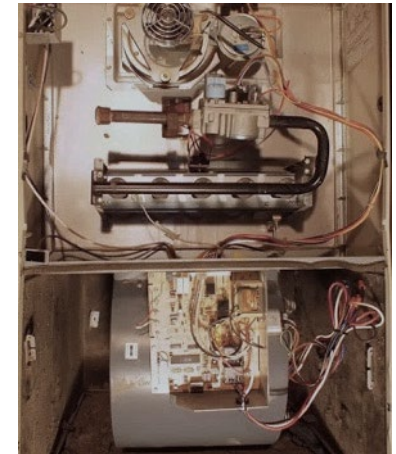
1990

- A fully Integrated Furnace Control that controls the gas valve, gas ignition, flame sensing, fan blower operation, induced draft control and sensing, & limit function control is patented.

Non-integrated Control Operated Furnaces



Integrated Furnace Control



IFC Options / Differences

Ignition Types



- **Hot Surface Ignition** using Silicon Carbide or Silicon Nitride ignitors at 120 or 80 Volts
- **Direct Spark Ignition** uses a spark probe to directly ignite burner gas
- **Proven or Intermittent Pilot** first checks for pilot ignition prior to opening the main gas valve

Gas Valve Stages



- Furnace **Gas Valves** are often single stage but can also be made with multiple stages or special opening characteristics.
- Most common valves in service are:
- **Single Stage**
 - **Two-Stage** featuring high/low fire. They usually initially open to 40% with second stage opening to 100%

Blower Motor Types



- **PSC or Permanent Split Capacitor motors** were regulated out of new residential furnaces made after July 3rd, 2019
- **ECMx or X-13 motors** use a controller to maintain constant torque on the blower shaft.
- **ECMv or Constant Speed motors** use a controller to maintain a constant airflow speed.

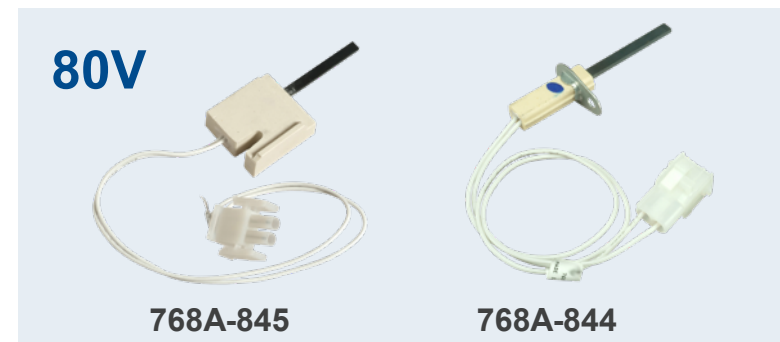
IFC 120V vs. 80V Hot Surface Ignitors

IFC's with 120V Silicon Carbide hot surface ignitors were introduced in 1990 and have been in continuous production since. The 50A55-843 replaces IFC's using 120V ignitors, PSC inducer/blower motors and single stage gas valves.

IFC's with 80V Silicon Nitride ignitors were used in furnaces from about 1997 to 2006. The 50A65-843 replaces IFC's using 80V ignitors, PSC inducer/blower motors and single stage gas valves.

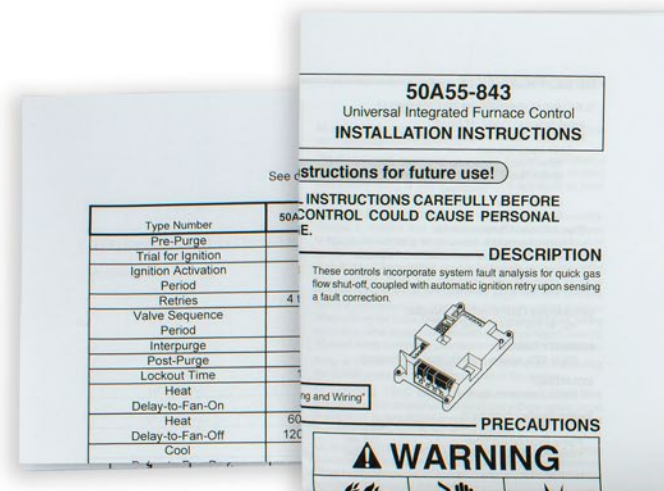
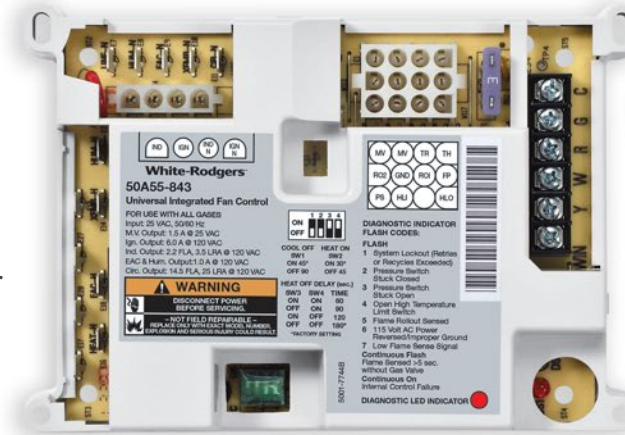


TECH TIP: Some original IFC's with 80V ignitor output can be replaced by an IFC with 120V ignitor output. The White-Rodgers Cross Reference calls out 80V models that can be directly replaced with 80V controls or upgraded to 120V control and ignitor.



50A55-843/50A65-843 What's In The Box?

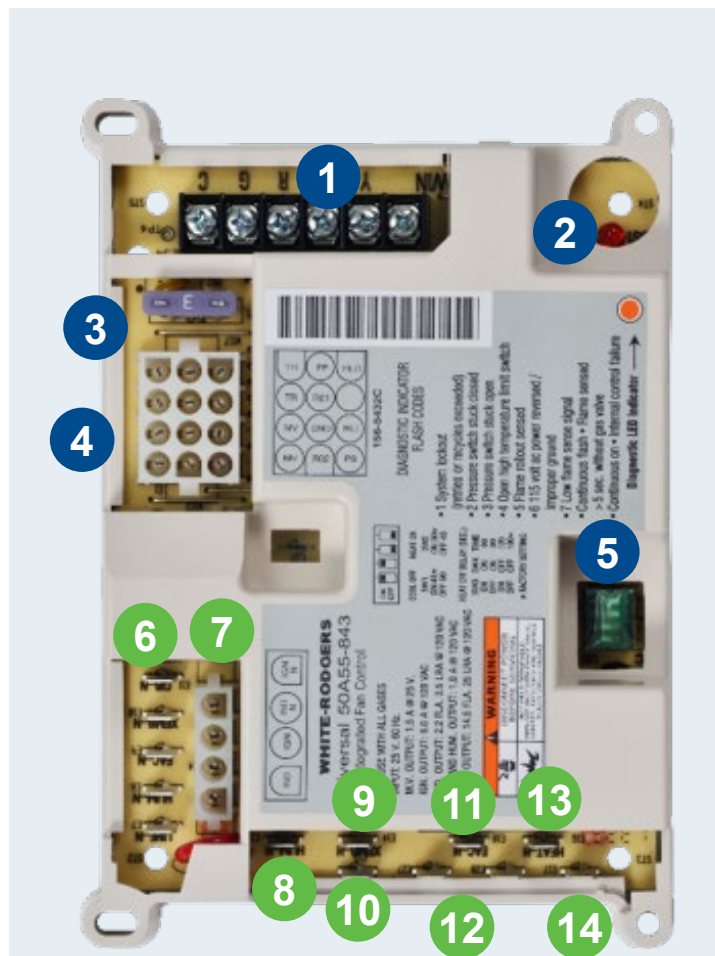
- 1– Integrated Furnace Control
- 1– Installation Instructions
- 1– Cross Reference Sheet
- 3– White extension wires
- 1– Black extension wire
- 1– Trane rollout jumper wire
- 1– Amana/Goodman 2 to 4-pin Inducer/ignitor adapter harness



White-Rodgers Universal 50A55-843/50A65-843 Components

80V Components:

1. 24V Thermostat Bus
2. Status / Fault LED
3. Replaceable Fuse
4. 12-pin Molex Connector
5. Heat On/Off, Fan Dipswitches



50A55-843

120V Components:

6. 5 Line Neutral Spades
7. 4-pin Inducer/Ignitor Molex Plug
8. 120V Humidifier Spade
9. 120V Transformer Spade
10. Line 120V Input Spade
11. Electronic Air Cleaner Spade
12. 2 Extra Blower Speed Park Spades
13. PSC Blower Heat Spade
14. PSC Blower Cool Spade

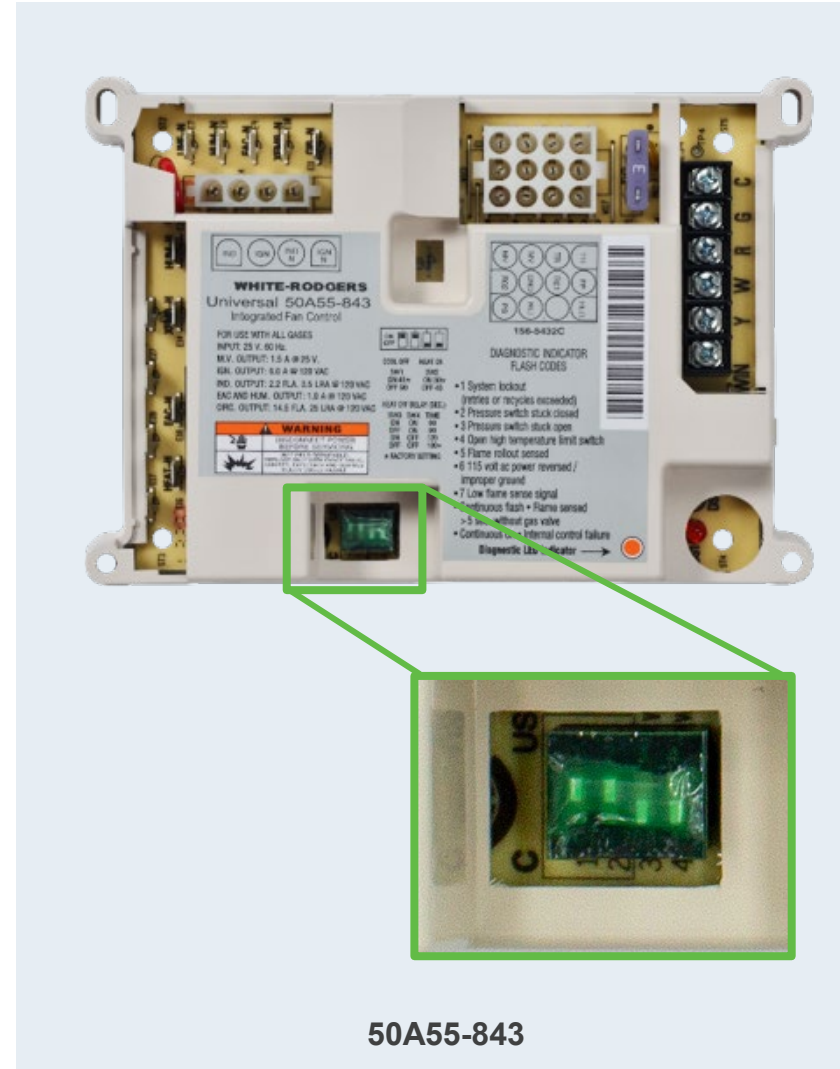
Adjustable Fan Delay Dipswitch Functions

Dipswitch Settings

OPTION SWITCH POSITIONS

COOL delay-to-fan-off:	Set switch #1	
45 sec.*	On	
90 sec.	Off	
HEAT delay-to-fan-on:	Set switch #2	
30 sec.*	On	
45 sec.	Off	
HEAT delay-to-fan-off:	Set switch #3	Set switch #4
60 sec.	On	On
90 sec.	Off	On
120 sec.	On	Off
180 sec.*	Off	Off

* Factory setting



TECH TIP: Power must be cycled after dipswitch settings are made.

50A55/50A65-843 Diagnostics

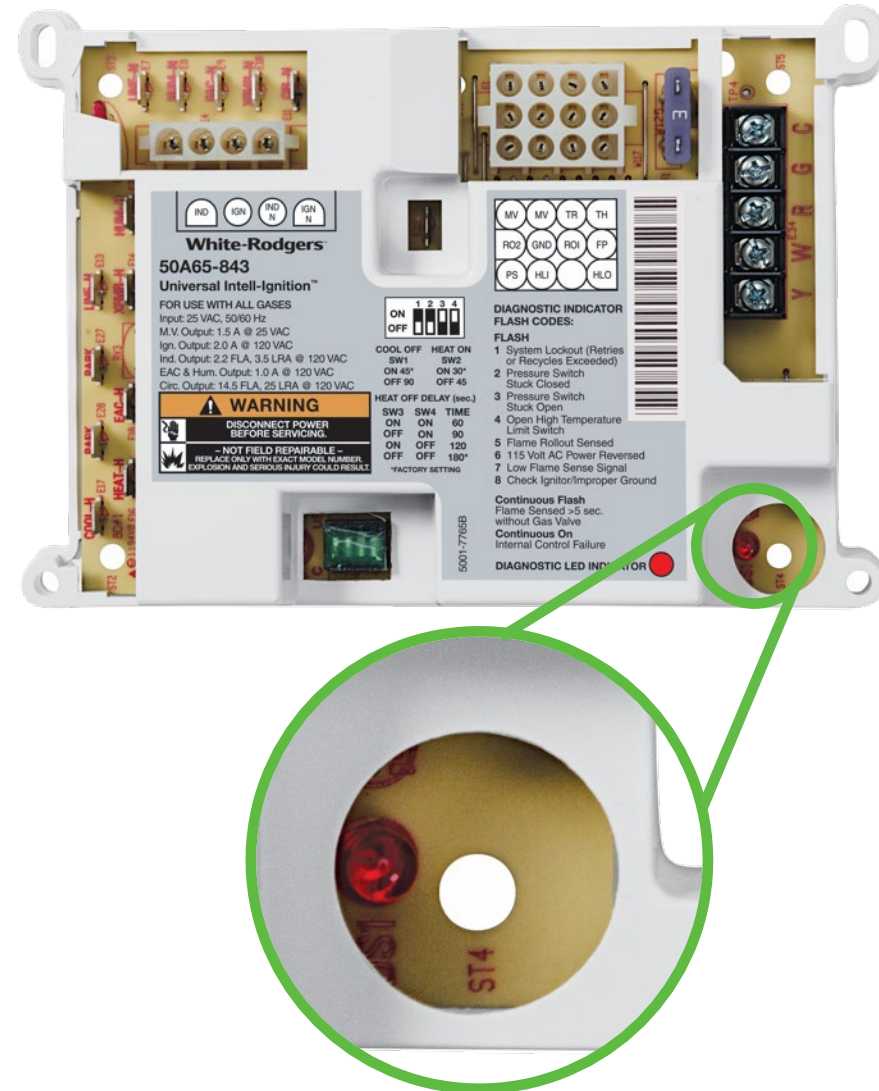
System troubleshooting is easy using flash code diagnostics

These controls continuously monitor their own operation and the operation of the system. **If a failure occurs, the LED will indicate a failure code as shown below. If the failure is internal to the control, the light will stay on continuously. In this case, the entire control should be replaced, as the control is not field-repairable.**

If the sensed failure is in the system (external to the control), the LED will flash in the following flash-pause sequences to indicate failure status (each flash will last approximately 0.25 seconds, and each pause will last approximately 2 seconds).

- | | |
|-----------------------------------|--|
| 1 flash, then pause | System lockout |
| 2 flashes, then pause | Pressure switch stuck closed |
| 3 flashes, then pause | Pressure switch stuck open |
| 4 flashes, then pause | Open limit switch |
| 5 flashes, then pause | Open rollout switch |
| 6 flashes, then pause | 115 Volt AC power reversed/Improper ground |
| 7 flashes, then pause | Low flame sense signal |
| Continuous flashing
(no pause) | Flame has been sensed when no flame should be present (no call for heat) |

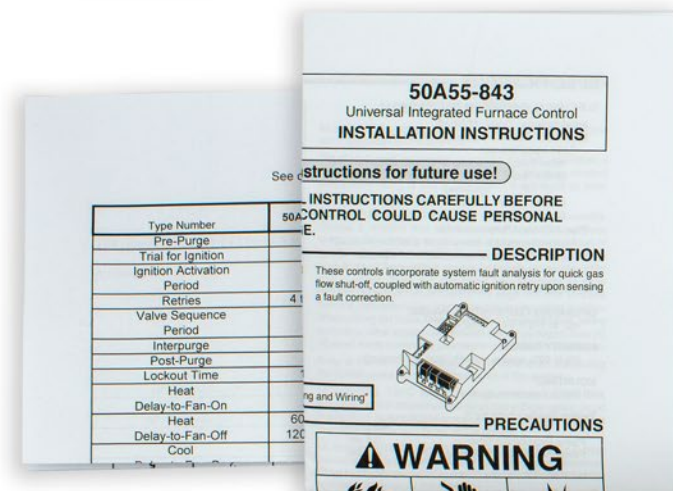
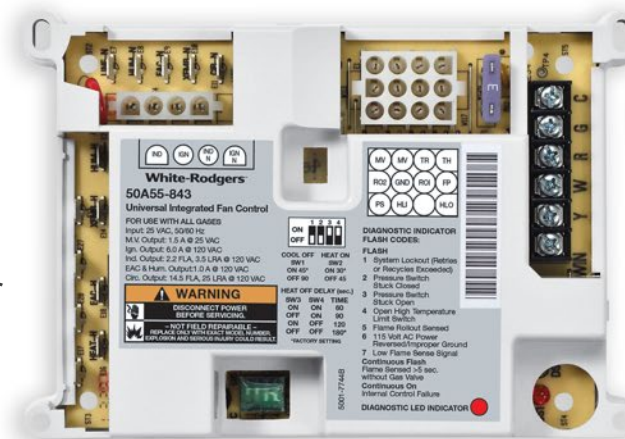
The LED will also flash once at power-up.



Install

50A55-843/50A65-843 What's In The Box?

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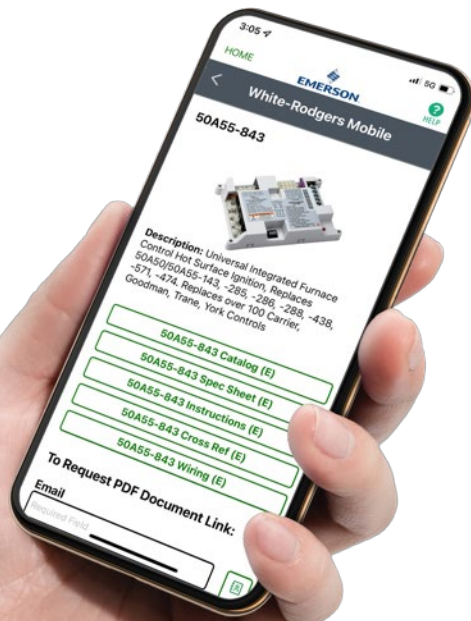
Disconnect Power and Gas

- 1 Turn off the power and gas to the furnace and remove the access panels.



Check Cross Reference

2 Check the old part number against the 50A55-843/50A65-843 box reference or WR Mobile.




White-Rodgers®
Régulateur de fournaise intégré
50A55-843

Applications mono-étage

Moteur de ventilateur PSC


Allumage HSI 120 V

Adopté par les **PROs**



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Universel

Garantie limitée de **1 an**



Cross Reference Replacement / Tableau de renvoi des remplacements

Climatic Corp. 117284 Dayton WW Grainger 3KA75 4DC53 4DC54 4DC55 4DC56 Fedders 194300330001 30757 Goodman 102077-14 10207719 Goodman Amana PCB8F117 102077-02 102077-03	10207704 102077-04 10207706 102077-06 102077-09 10207710 102077-10 10207710 10207714 GW Berkheimer 75671 75672 HD Supply 78712 83388 Hughes Supply 084141 ICP Carrier 1010806	1380686 1380698 1380699 Johnstone Supply L38-798 L38-799 L38-800 L38-801 Lennox 1214201 5618501 X4459 X445901 Metropac 14028 14029 14030 14031	Thermo Products 350486 Trane CNT02789 CNT02891 CNT03799 D341235P01 50A55-3797 50A55-474 50A55-571 Trane American Standard CNT1684 CNT1686 CNT1687 D330927P01 D330930P01 D330934P01 D340035P01 D340774P01	D341235P02 X13120666010 X13130436-01 X13130436010 X13130436-02 X13130436-04 X13130436040 X13640678040 X13650597010 D341229P01 D341235P03 50A55-476 continued... (suite)
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Take a Picture of Wiring

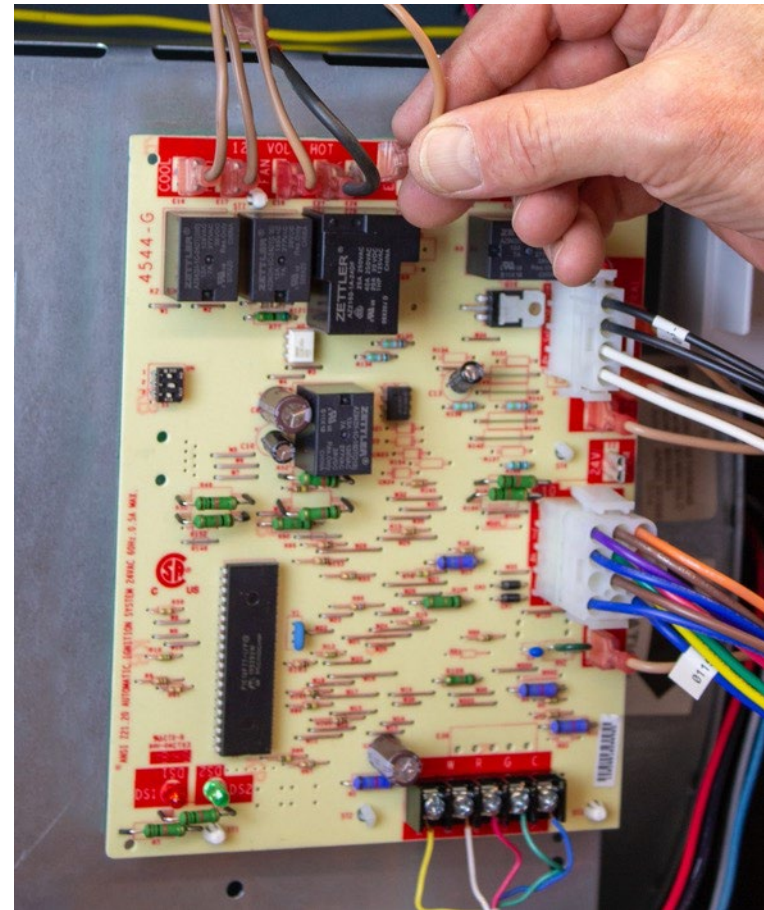
- 3 Take pictures before removing any wiring. Label existing wiring, as necessary.



Disconnect Wiring

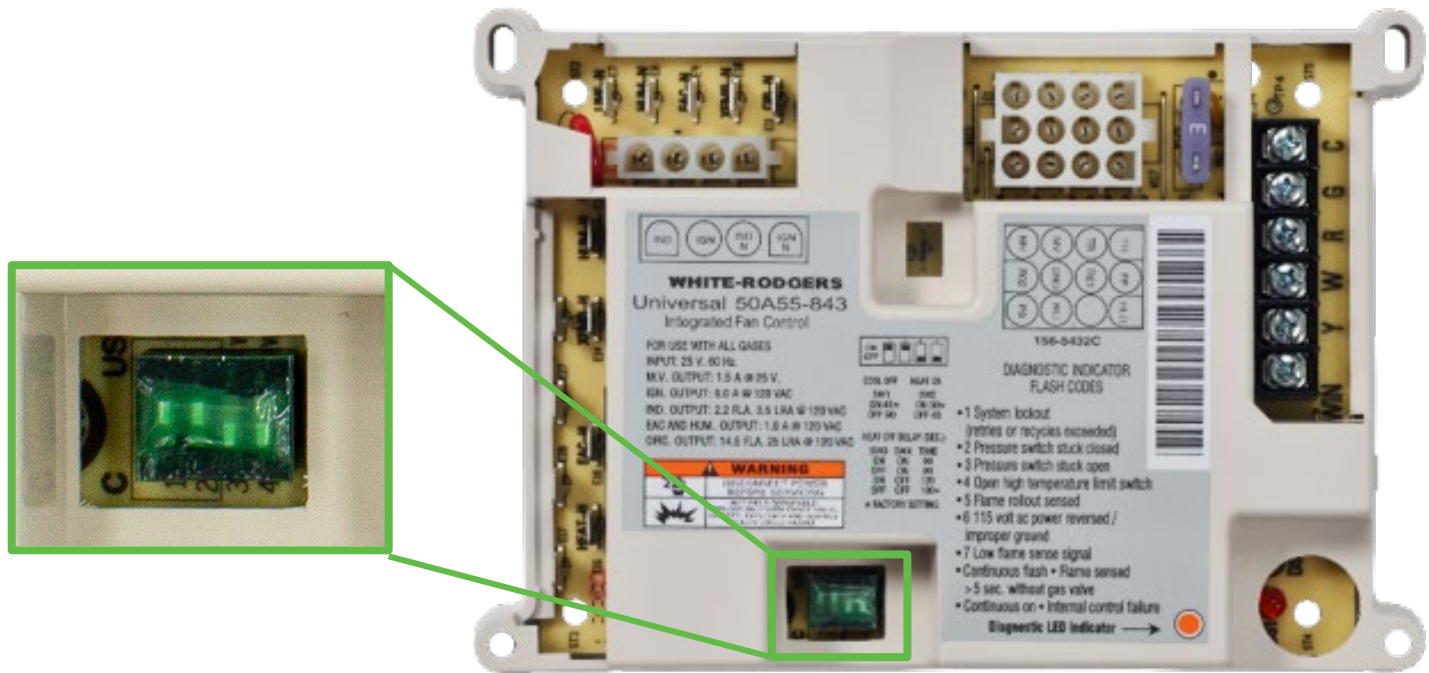
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- Molex connectors
- Thermostat wiring
- Blower motor wires
- 120V line voltage connections
- Transformer connections
- Remove the old board



Dipswitch Settings

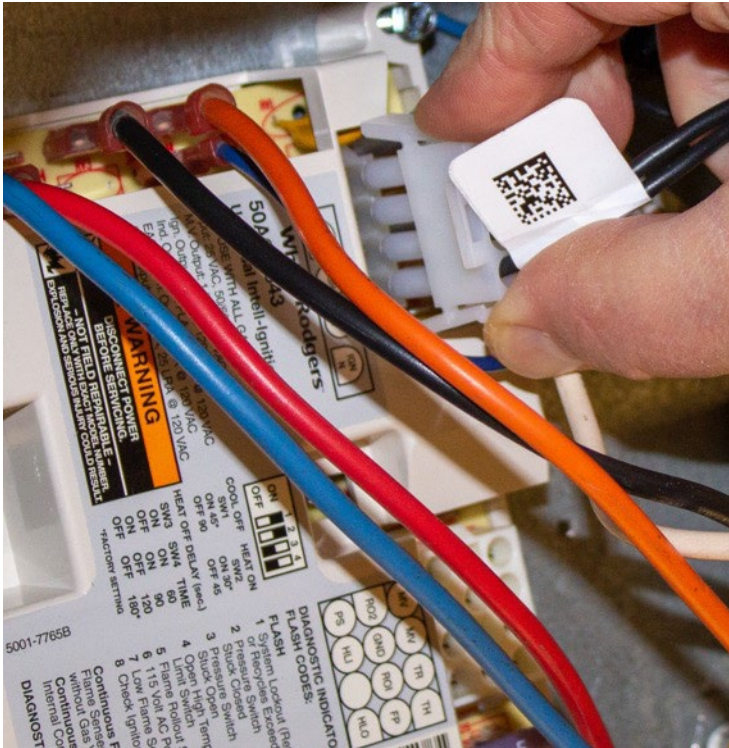
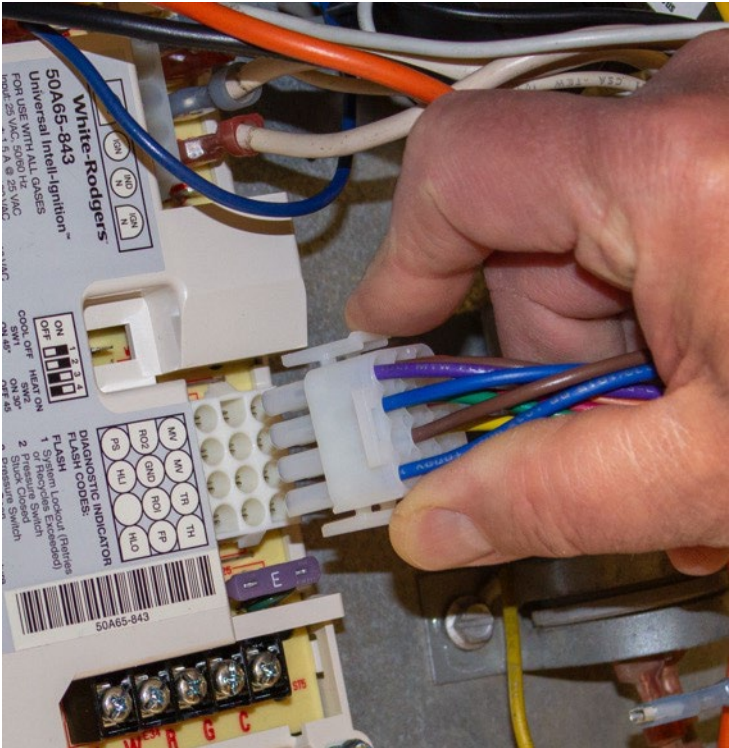
- 5 Set fan delay dipswitches to match the old control settings.



 **TECH TIP:** The switches can be moved with a small screwdriver.

Connect Wiring Harnesses

7 Connect the harnesses to the new control.



Connect Remaining Wires

8

Connect low voltage thermostat wires and remaining 120 VAC hot and neutral wires shows in the table below



50A55-843 Terminal	Terminal Type	System Component Connection
W	Terminal block with captive screws	low voltage thermostat W terminal (or equivalent)
G		low voltage thermostat G terminal (or equivalent)
R		low voltage thermostat R terminal (or equivalent)
Y		low voltage thermostat Y terminal (or equivalent)
		(2nd wire from Y terminal goes to 24 VAC HOT side of compressor contactor coil)
C		24 VAC COMMON side of compressor contactor coil
TWIN*		one wire twinning terminal
COOL	spade terminal	circulator blower COOL SPEED terminal
HEAT	spade terminal	circulator blower HEAT SPEED terminal
PARK (2 TERMINALS)	spade terminal	unused circulator blower terminals
LINE	spade terminal	input voltage (120 VAC) HOT side
XFMR	spade terminal	24 VAC transformer line voltage HOT side
EAC (optional)	spade terminal	electronic air cleaner HOT side
HUM (optional)	spade terminal	humidifier HOT side
CIR N	spade terminal	circulator blower NEUTRAL terminal
LINE N	spade terminal	input voltage (120 VAC) NEUTRAL side
XFMR N	spade terminal	24 VAC transformer line voltage NEUTRAL side
EAC N (optional)	spade terminal	electronic air cleaner NEUTRAL side
HUM N (optional)	spade terminal	humidifier NEUTRAL side

Connect Power and Gas

- 9 Replace the access panel. Restore the electrical power and gas supply. Refer to the furnace installation instructions for start-up and check-out procedures.



Troubleshooting

If the system fails to start properly, review the troubleshooting tips included in your instruction sheet.

If the sensed failure is in the system (external to the control), the LED will flash in the following flash-pause sequences to indicate failure status (each flash will last approximately 0.25 seconds, and each pause will last approximately 2 seconds).

LED	Failure Status
1 flash, then pause	System lockout
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