

50M56U-751 IFC

Direct OEM Replacement

Carrier / ICP Single Stage IFC

Business and Product Overview

White-Rodgers 50M56U-751 IFC

Upgraded in 2020, the 50M56U-751 Integrated Furnace Control offers a direct replacement option for 33 controls in the Carrier/ICP family. *Replacing an estimated 10 Million units, across the US*.*

Including

- Carrier Single Stage + PSC
 - (1994-2019)
- ICP Single Stage + PSC
 - (2005-2019)

Plus, the 50M56U-751 offers:

- Tri-Color LED
- Fault Recall
- Easily-accessible Flame Current Test Pins



Replace More Parts with One SKU

Competitive Comparison:

	White-Rodgers	Carrier/ICP	ICM282A
Cross Reference Coverage	1 Control for 33 Cross Refs	5 Controls for 33 Cross Refs	1 Control for 7 Cross Refs
OEM Mounting	✓	✓	✓
Tri-Color LED	✓	✗	✗
Fault Recall & Clearing	Simple Push Button	Jumper Twin & C Terminals	1 Fault Only
Robust FR4 PCB Material	✓	✗	✓
Component Self Test Mode	✓	✓	✓
Flame Current Test Pins	✓	✗	✗
Constant Fan Speed & Dehum Mode	Included	1 Control Only	✗
No Harness for Most Applications	✓	✓	✗

Cross Reference:

Carrier/ICP Brands

1172550
1183599
1184594
1184783
1186024
1186115

325878-751

CEPL130437-01
CEPL130437-01-1
CEPL130438-01
CEPL130590-01
CEPL131004
CEPL131004-02

CEPL131004-20
CEPL131004-20-ICP
CEPL131012-01
CEPL131012-01-1
CEPL131012-02
CEPL131012-02-1
CEPL131012-20

HK42FZ004
HK42FZ007
HK42FZ008
HK42FZ009
HK42FZ011
HK42FZ013
HK42FZ016

HK42FZ018
HK42FZ034
HK42FZ036
HK42FZ045
HK42FZ061
HK42FZ062

ICM

ICM282A

Johnstone
L43-837
L47-385

White-Rodgers

50M56-751
50M56U-751

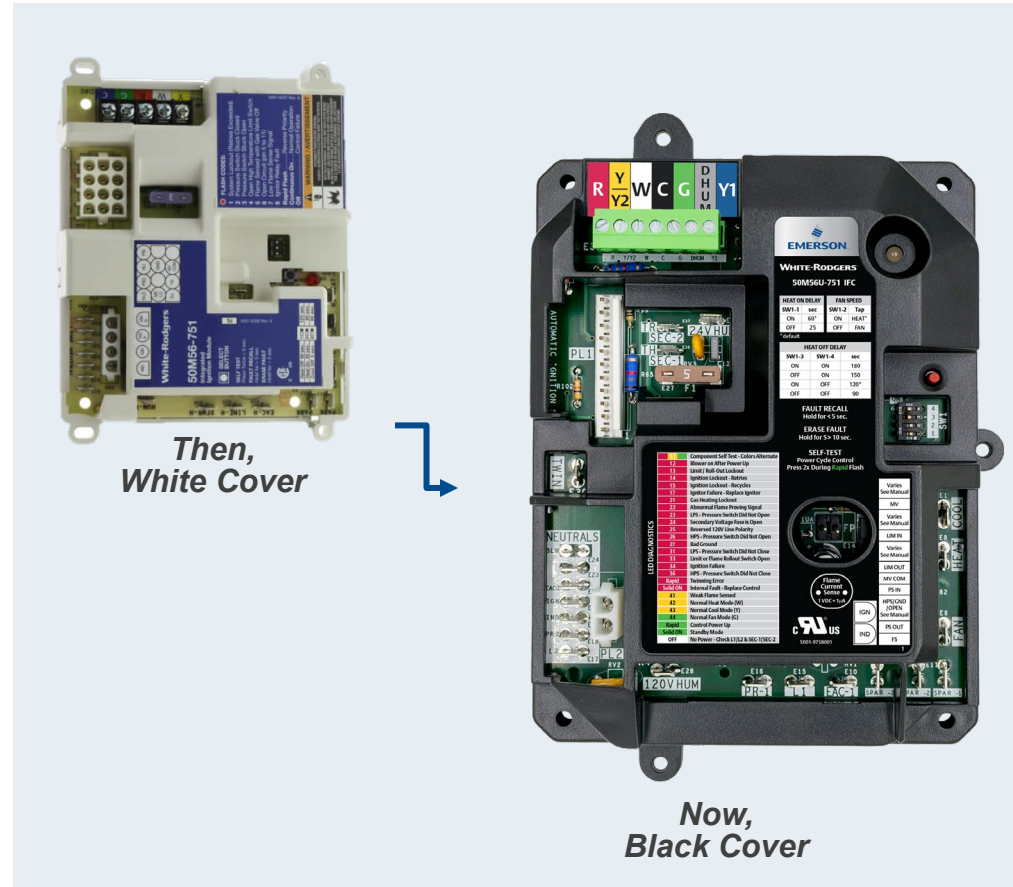
(SKU's with boxes around them are old "White Cover" cross references)

50M56U-751 Direct OEM Replacement

Product Improvements

To improve the installation experience and increase our cross references, White-Rodgers has made significant product improvements.

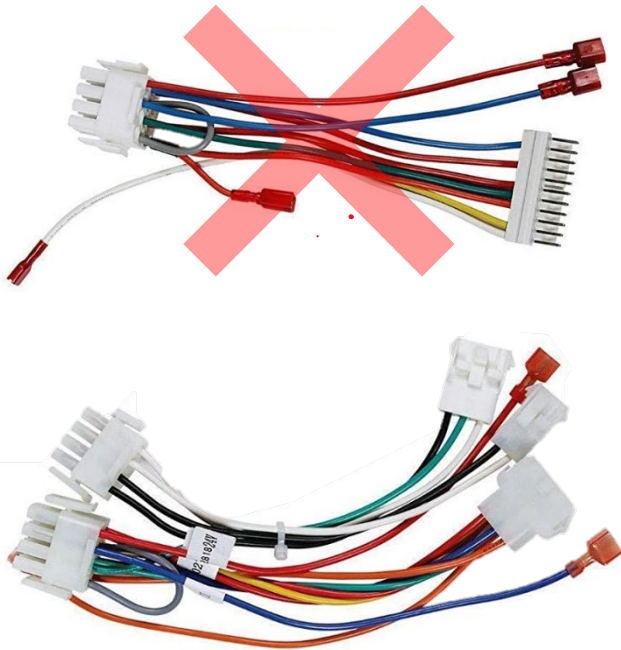
- New ICP Harness
- 12 Pin Molex **Upgraded** to 11-Pin In-Line Connector
- 4 Pin Inducer/Ignitor Molex **Upgraded** to 2-Pin
- 24v Detachable Thermostat Bus + Y2 and Dehum I/O
- 24v or 120v Humidifier
- Fan-Only Speed Dipswitch
- Flame Current Test Pins
- Twinning
- Mounting options



Improved Adapter Harnesses

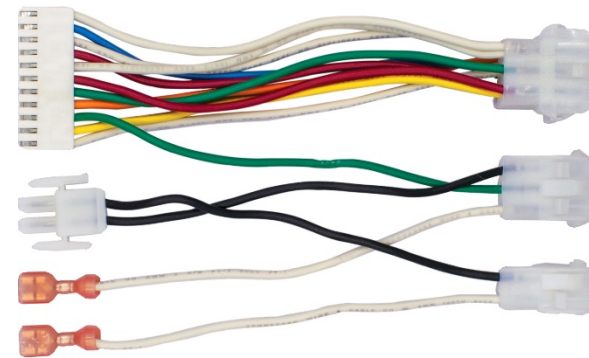
2 Previous “White Cover” Harnesses

- Harnesses connect to the old controls 12 pin Molex plug.



2 New “Black Cover Harnesses

- Harnesses connect to the new controls 11 pin in-line plug.
 - Eliminates secondary harness
 - New "Flip Harness" provides ICP compatibility

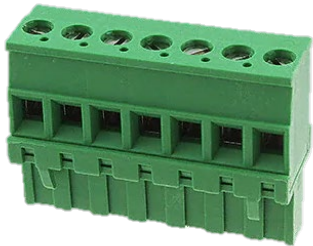


TECH TIP: With the majority of existing Furnace Harnesses being 11 pin connectors, the new control will not need any adapter!

Key Features

Detachable T-Stat Bus

- Bus disconnects from the control to allow for easy thermostat wiring.



24v Humidifier Spade

- The “white cover” control allowed for 24v humidification through an adapter harness. The new “black cover” has a designated spade on the control.


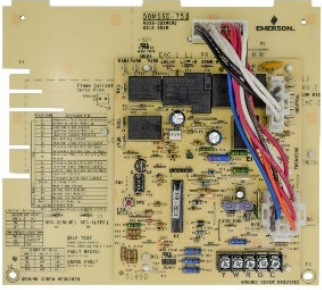








Y2/Dehum

- Two-stage outdoor cooling ready
- Dehum terminal for lower blower speed



White-Rodgers HSI Gas Furnace Components – Carrier Family

CARRIER	CARRIER	CARRIER	CARRIER/UNIVERSAL
50M56U-751	50M56D-751	21V51D-751	50X57-843
			
IFC - PSC	IFC - PSC	IFC – 2 Stage	IFC - ECMx
CARRIER / ICP	CARRIER / ICP	CARRIER ICP	CARRIER / ICP
790-751A1	789A-751A1	789A-751KT1	789A-751KT2
			
Flame Sensor	Ignitor	Ignitor Kit – 33 1/3”	Ignitor Kit – 40”

Rest Assured, We Know The Industry

Automatic Configuration

- 50M56U-751 matches its functional operation to the OEM controls being replaced.
- System design variations, such as with or without a Housing Pressure Switch, are automatically recognized and properly handled.

Enhanced Code 31 Software

- 50M56U-751 features automatic recovery from intermittent high wind conditions without going into an unnecessary 3-hour lockout.



What Our Customers are Saying About 50M56U-751 IFC

“I was so impressed with this furnace circuit board. I installed it in a generic Carrier type brand furnace. It came with necessary wiring harnesses for each type of furnace and the install was a piece of cake.”

- January, 2020

“This White Rodgers board is an excellent replacement board that comes with a nice plastic cover protecting it from the elements. The instructions were simple to follow and this was an easy installation.”

- July, 2019

“This was very easy to install when using the instruction booklet, which is included. Everything is step by step and the LED diagnostic helps guide you if you've made a mistake.”

- December, 2018



WR Mobile App

Always up-to-date and easy to use:

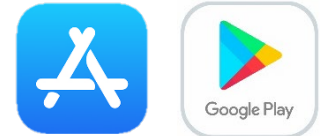
- Mobile App
- White-Rodgers Website



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



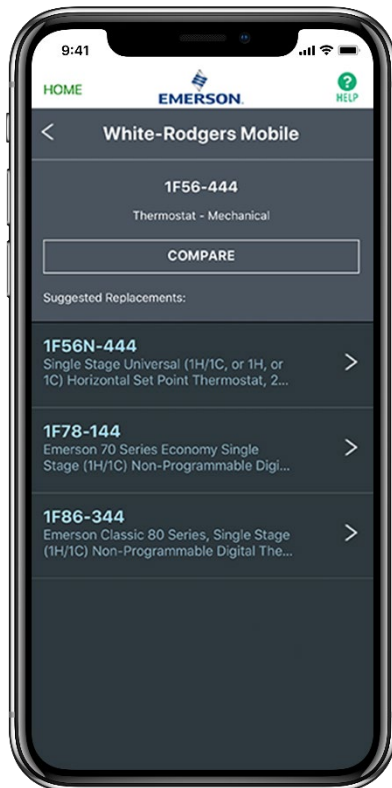
WR Mobile App

Easy to use!

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



Product Number

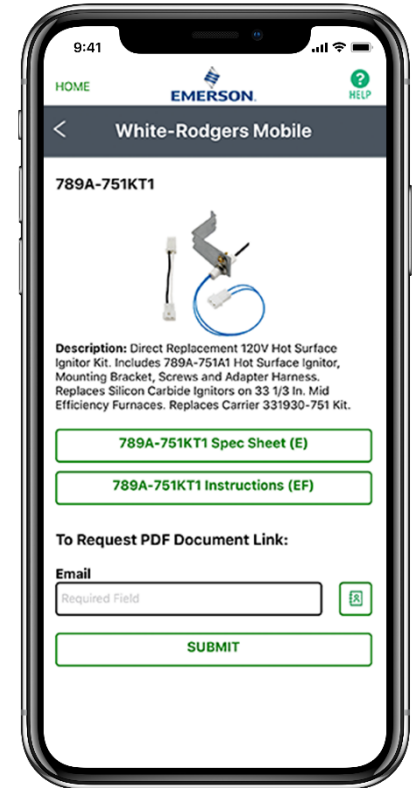


Scrollable Product List



50M56U-751 Direct OEM Replacement

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 shows the Emerson website header with navigation links: Emerson.com, About Us, Investors, Careers, Contact Us, News & Events, Sign In, and United States (English). Below the header is the Emerson logo and the text 'CLIMATE TECHNOLOGIES'. The main navigation menu includes Products, Industries, Training & Support, Tools & Resources (highlighted), and Expertise. A search bar and shopping cart icon are visible on the right. A dropdown menu for 'TOOLS & RESOURCES' is open, listing various resources. A green arrow points to the link 'White-Rodgers Cross Reference/Product Information'.

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- E360
- Ebooks
- HVAC On Air Podcasts
- HVACR Calculators
- Mobile Apps
- The Helix
- Where To Buy
- [White-Rodgers Cross Reference/Product Information](#)
- Product Selection Software

Transforming How People and Work

Drawing on our expertise and global perspective, we combine technology to develop HVACR and infrastructure solutions for our customers.

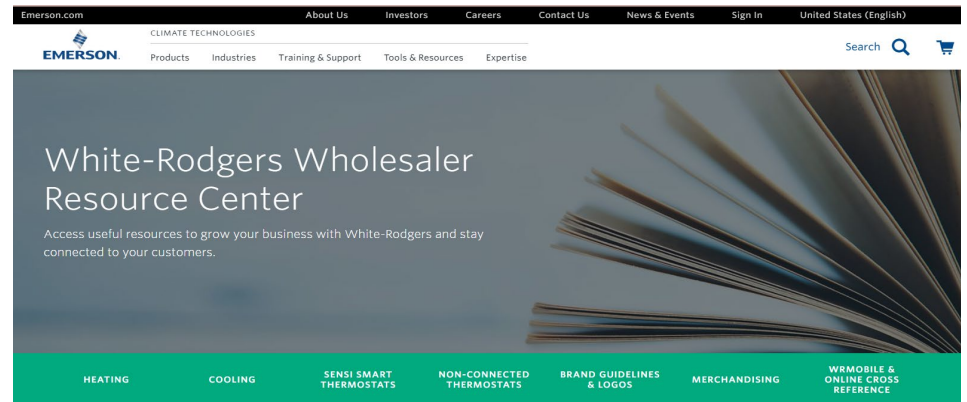
Wholesale Resource Site

Access useful resources to grow your business.

Visit: <https://climate.emerson.com/en-us/brands/white-rodgers/white-rodgers-wholesaler-resource-center>

You'll find videos, stocking lists and product launch information for the following product families:

- Heating Controls
- Cooling Controls
- Sensi Smart™ Thermostats
- Traditional Thermostats
- Contractor Rewards
- Product Merchandising



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Confidence comes from knowing your reputation is in good hands; that you have the stability of an industry leader by your side; that they've been in the game for 125 years and they'll be around for a whole lot longer. That's the comfort you feel when you recommend Emerson, because you know you're working with the best for your customers and your business.

[BROCHURE](#)

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

White-Rodgers 50M56U-751 IFC

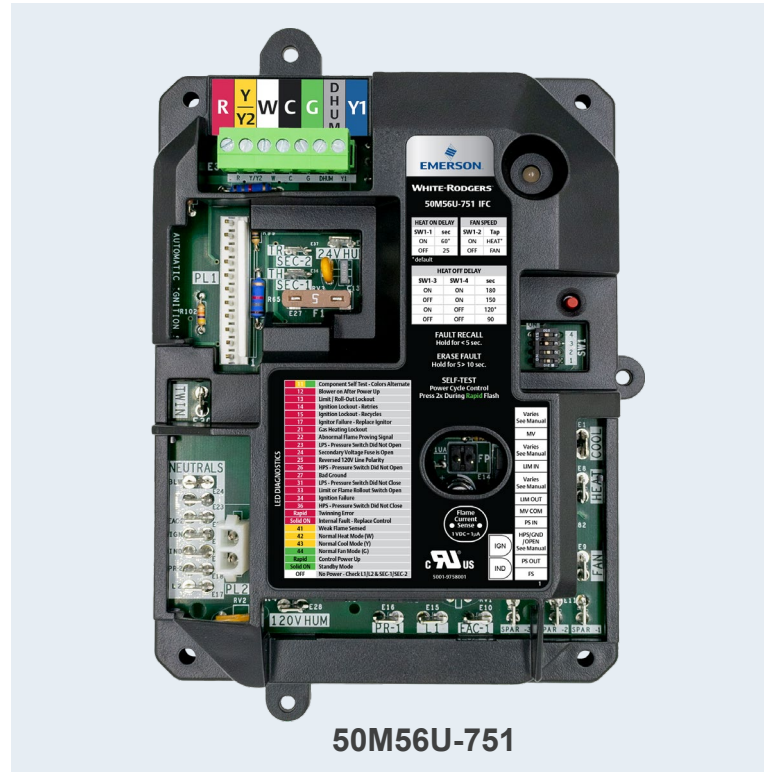
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- Carrier Single Stage + PSC
 - (1994-2019)
- ICP Single Stage + PSC
 - (2005-2019)

Plus, the 50M56U-751 offers:

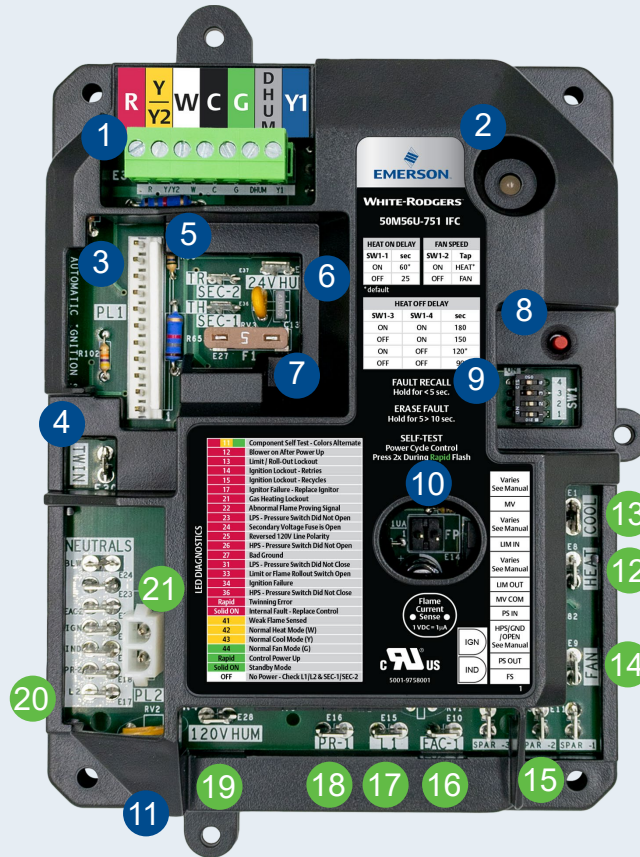
- Tri-Color LED
- Fault Recall
- Easily-accessible Flame Current Test Pins



White-Rodgers Carrier 50M56U-751 Components

24V Components:

1. Removable 24V Thermostat Bus
2. Status/Fault LED
3. 11 Pin Inline Connector
4. Twinning Spade
5. 24V Transformer Spades
6. 24V Humidifier Spade
7. 5a Low Voltage Fuse
8. Fault Recall Button
9. Heat On/Off, Fan Dipswitches
10. Flame Sense Test Pins
11. 3 Tab or 4 Corner Mounting Options



50M56U-751

120V Components:

12. PSC Blower Heat Spade
13. PSC Blower Cool Spade
14. PSC Blower Fan Only Spade
15. 3 Extra Blower Speed Park Spades
16. 120V EAC Spade
17. 120V to Transformer Spade
18. Line 120V Input Spade
19. 120V Humidifier Spade
20. 7 Line Neutral Spades
21. 2 pin Inducer/Ignitor Molex Plug

Test Pins

2 pins extend from the Control Board to the surface of the Black Cover.

To Test:

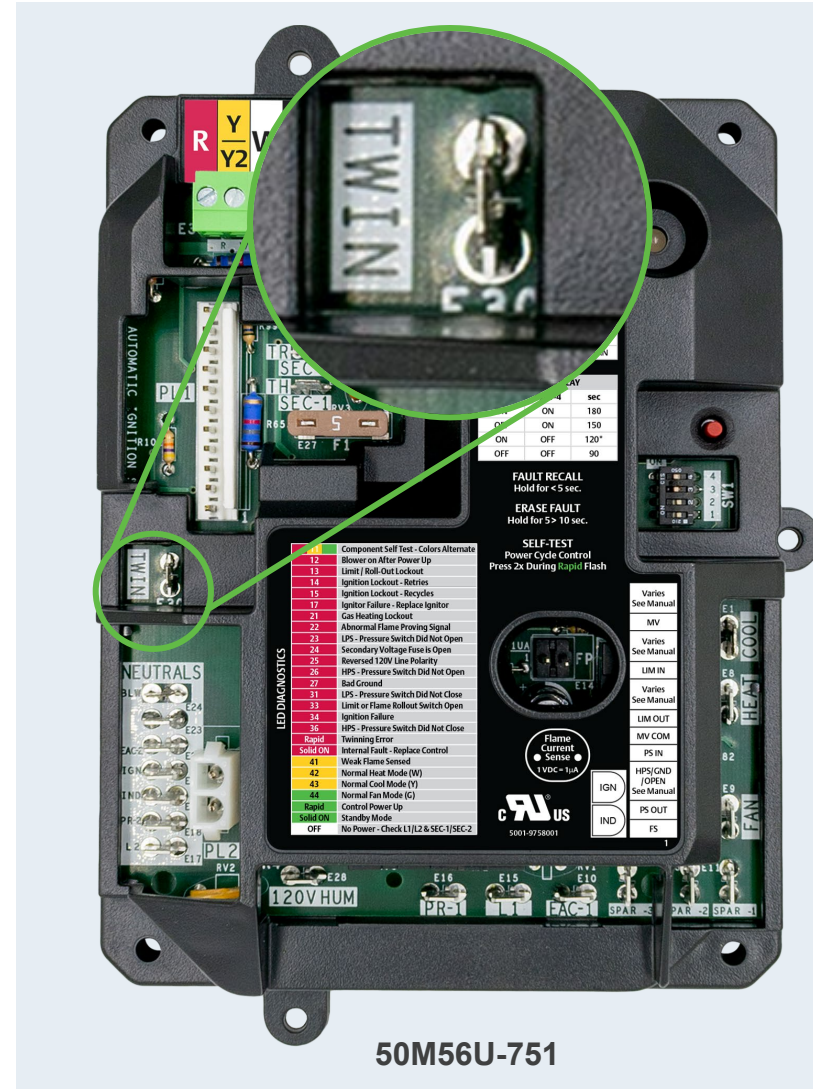
- The furnace must have a call for heat + burners producing flame.
- Set a multimeter to vDC and place a meter probe on each pin.
- Convert vDc to MicroAmps using a 1:1 ratio.
- A good flame sense reading will be between 1.0 – 5.0 μ A.



Twinning

Two 50M56U-751 Controls can be connected to operate simultaneously.

- Twinning requires a connection of the **Twin** Terminal on both boards using an 18ga wire.
- The Board with the Thermostat connection will fully function including the LED indicator and Dipswitch settings.
- The Twinned Board will operate simultaneously as determined by the wired board unless “W” or “Y” are powered to it.
- The Twinned unit can be wired for Heat to come on by utilizing the “W” terminal either with the 1st unit or as a 2nd stage.



Mounting Options

The raised molded base provides space between board and unit mounting plate. With two unique mounting options.

Option 1

- 3 tabs match some OEM models with a tray.
 - 3x ½” screws are provided

Option 2

- 4 mounting holes that match some OEM boards give additional options for alternate mounting.
 - 4x 1” screws are provided

3 mounting tabs match existing boards for easy replacement.



4 mounting holes match some OEM boards for alternate mounting.

Status & Fault Codes for Troubleshooting

LED DIAGNOSTICS

11	Component Self Test - Colors Alternate
12	Blower on After Power Up
13	Limit Roll-Out Lockout
14	Ignition Lockout - Retries
15	Ignition Lockout - Recycles
17	Ignitor Failure - Replace Ignitor
21	Gas Heating Lockout
22	Abnormal Flame Proving Signal
23	LPS - Pressure Switch Did Not Open
24	Secondary Voltage Fuse Is Open
25	Reversed 120V Line Polarity
26	HPS - Pressure Switch Did Not Open
27	Bad Ground
31	LPS - Pressure Switch Did Not Close
33	Limit or Flame Rollout Switch Open
34	Ignition Failure
36	HPS - Pressure Switch Did Not Close
Rapid	Twinning Error
Solid ON	Internal Fault - Replace Control
41	Weak Flame Sensed
42	Normal Heat Mode (W)
43	Normal Cool Mode (Y)
44	Normal Fan Mode (G)
Rapid	Control Power Up
Solid ON	Standby Mode
OFF	No Power - Check L1/L2 & SEC-1/SEC-2

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43	Normal Cool Mode (Y)
44	Normal Fan Mode (G)
Rapid	Control Power Up
Solid ON	Standby Mode
OFF	No Power - Check L1/L2 & SEC-1/SEC-2

50M56U-751

Tri-Color LED

Fault Button Offers:

- 5 Fault Recall
- Fault Code Erasure
- Self-Test Mode

Troubleshooting made easy with a Fault Code Label on the control cover.

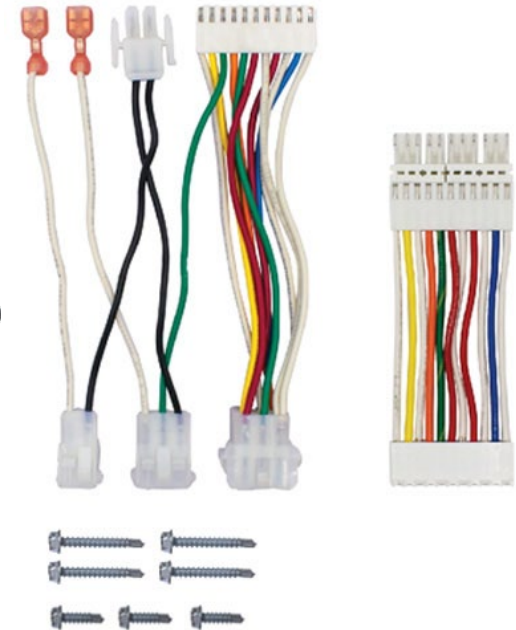
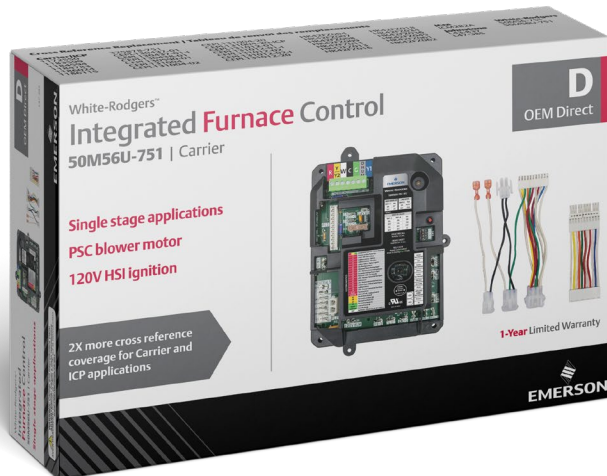
Updated Fault Code 31 Software


Install

What's in the Box?

50M56U-751 Integrated Furnace Control

- 9-Pin Adapter Harness
- “Flip” Adapter Harness for ICP
- 4 – 1” Sheet Metal Screws
- 3 – ½” Sheet Metal Screws
- Installation Instructions



 **TECH TIP:** Smaller box in the new 50M56U-751 for additional truck space.

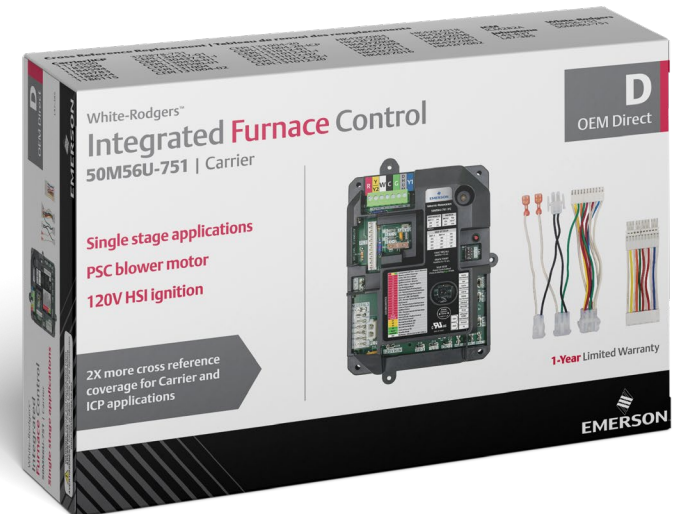
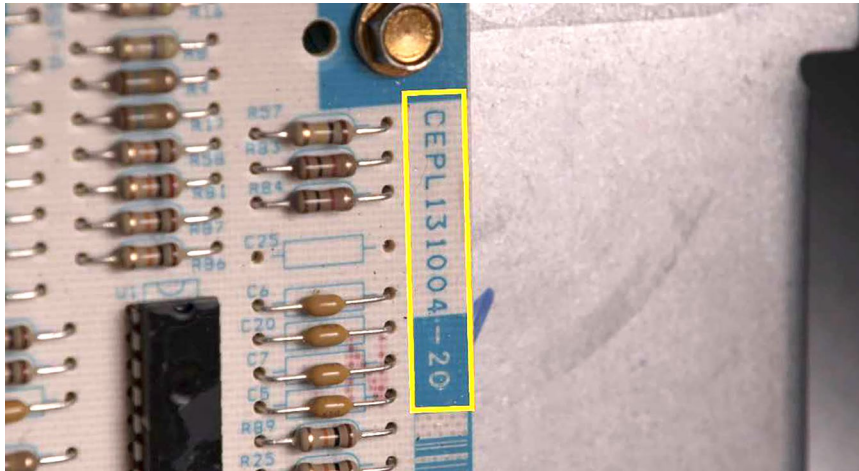
Installation – Step 1

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



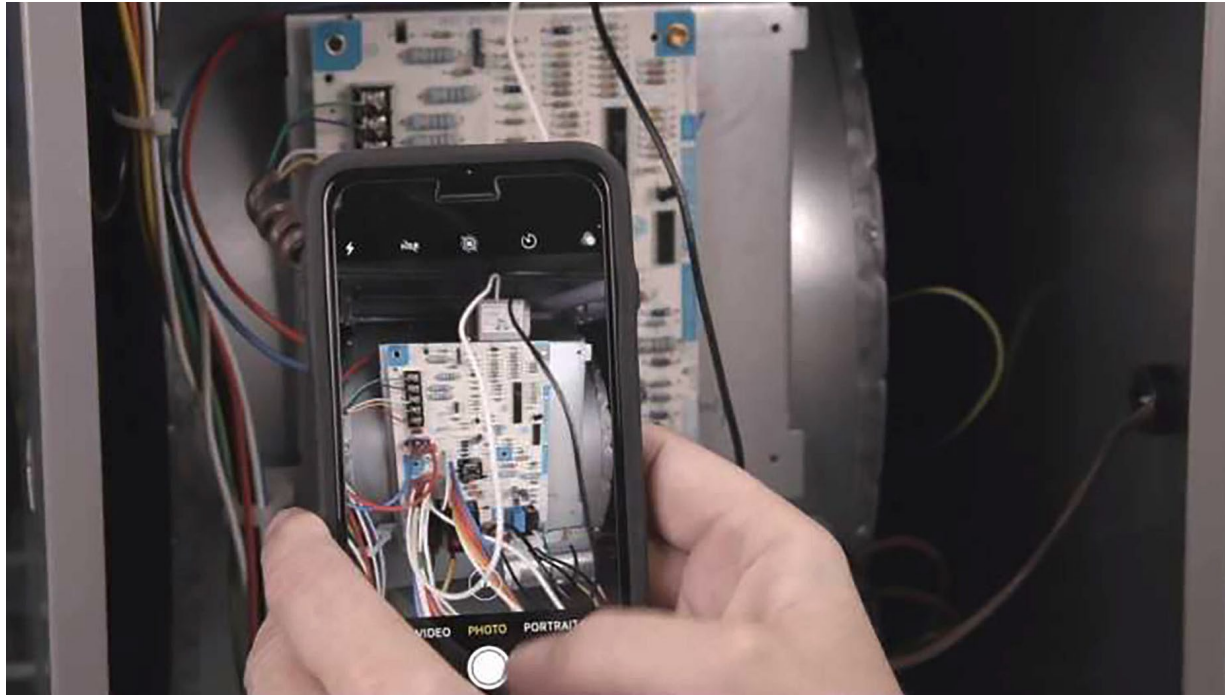
Installation – Step 2

- 2 Check the part number on the part replaced against the 50M56U-751 Cross Ref on the package or on the White-Rodgers Mobile App.



Installation – Step 3

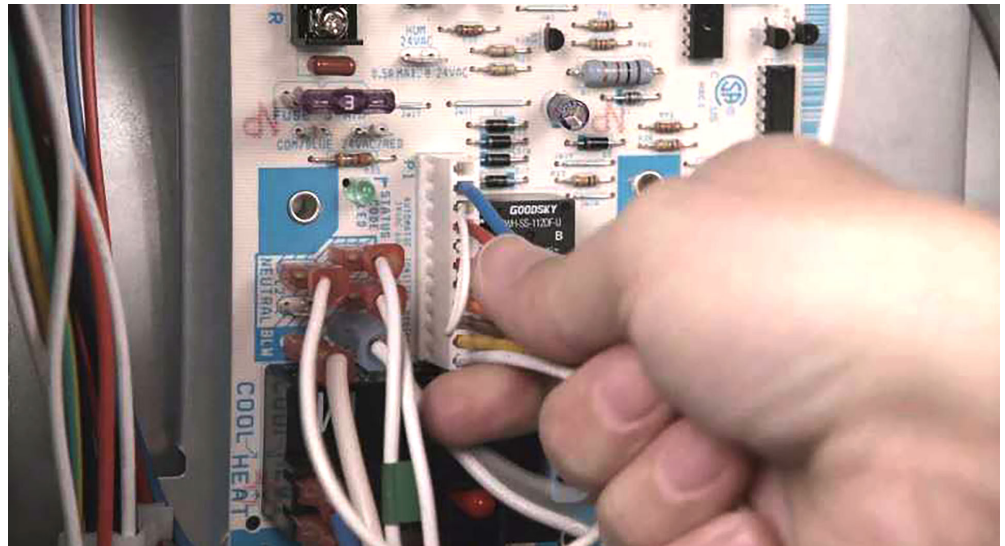
- 3 Take a photo of the existing setup.



Installation – Step 4

4 Remove the Wiring:

- Disconnect Thermostat Wiring
- Disconnect 24v Transformer wires
- Remove Carrier Inline plug
- Remove 120v Power and Neutral Transformer Wires
- Remove 120v Power and Neutral Wires
- Disconnect 2 Pin Molex Hot Surface Inducer Plug and Neutral Wires
- Remove Blower Motor Wires (Note all colors)
- Remove the Board



Installation – Step 5

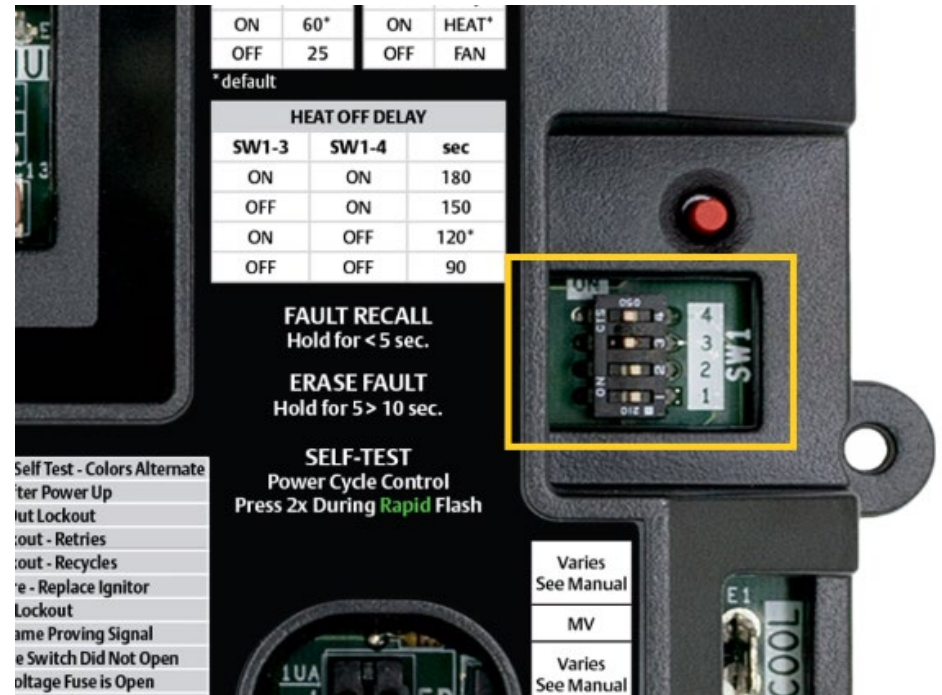
5

Match the board's dipswitch settings to the existing control. Use a screwdriver to push the dipswitches to their required locations according to the supplied install instructions

CONFIGURATION

Heat ON Delay (sec.)	Constant Fan Speed	Heat OFF Delay (sec.)	
SW1-1 60* ON OFF	SW1-2 HEAT* ON OFF	SW1-3 & 4 180 ON OFF	 150 ON OFF
 25 ON OFF	 FAN ON OFF	 120* ON OFF	 90 ON OFF

*Default



Installation – Step 6

- 6 Mount the new board. Select corner mounts, tab mounts, or custom, depending on application.



Installation – Step 7

7

Refer to instruction sheet to determine if harnesses are required for your application. Connect if required.

WHITE-RODGERS

50M56U-751 with Black Cover
Carrier/ICP Integrated Single Stage
120V Hot Surface Ignition Control Kit

INSTALLATION INSTRUCTIONS

FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR OPERATING THIS CONTROL COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

PARTS INCLUDED

- 50M56U-751 Integrated Furnace Control
- 9-Pin Adapter Harness
- Flip Adapter Harness

PARTS INCLUDED

- 4 – 1" Sheet Metal Screws
- 3 – 1/2" Sheet Metal Screws
- Installation Instructions

DESCRIPTION

50M56U-751 is an aftermarket direct replacement control kit for Carrier and ICP single stage furnace products with PSC blower motors.

DESCRIPTION

TWINNING: 50M56U-751 can be twinned. The other control must also be a 50M56U-751 with Black cover to ensure proper functionality.

ELECTRICAL RATINGS:
Input Low Voltage: 24 VAC, 60 Hz
Input Line Voltage: 120 VAC, 60 Hz, 1ϕ
Max Input Current: 0.45 A @ 24 VAC

Relay Contact Ratings:
 Gas Valve: 1.5 A, 0.6 PF @ 24 VAC
 Ignitor Relay: 1.2 A @ 120 VAC
 Inducer Relay: 2.8 A @ 120 VAC
 Circulator Relay: 10 FLA, 25 LRA @ 120 VAC
 Humidifier Load: 1.0 A @ 24 or 120 VAC
 Electronic Air Cleaner: 1.0 A @ 120 VAC

Flame Current Requirements:
 Minimum current to ensure flame detection: 0.25 µA DC
 Maximum current for non-detection: 0.1 µA DC
 Maximum allowable leakage resistance: 100 M ohms
 * Measured with a DC ammeter
 Flame Establishing Time: 0.8 seconds maximum
 Flame Failure Response Time: 2.0 seconds maximum

OPERATING TEMPERATURE RANGE:
 -40° to 176°F (-40° to 80°C)

HUMIDITY RANGE:
 5 to 95% relative humidity (non-condensing)

SPECIFICATIONS & TIMINGS

AGENCY APPROVALS: UL USA / Canada
GASES APPROVED: Natural, Manufactured, Mixed, Liquid Petroleum, and LP Gas Air Mixtures.

CAUTION

Risk of Electric Shock. Disconnect electric power to system until installation is complete. Do not use on circuit exceeding specified voltage. Higher voltage will damage control and could cause shock or fire hazard.

This control is not intended for use in locations where it may come in contact with water.

May cause flame rollout. Shut off main gas to heating system until installation is complete.

emerson.com/white-rogers

PART NO. 37-7751001

2031

WIRING

Most furnaces are serviced by simply connecting the OEM wiring directly to the new 50M56U-751 control. Exceptions to this rule are covered below:

9-Pin Adapter Harness
 Used when replacing the following OEM controls:
 HK42FZ004, HK42FZ007, HK42FZ008, HK42FZ009, HK42FZ011, HK42FZ016

NOTE: Furnaces previously serviced with Carrier 325878-751, ICM 282A, or White-Rodgers 50M56U-751 kits may have an adapter harness already installed between the factory wiring and the control being replaced. If found, remove the old adapter harness and replace it with the new one provided in the kit.

11-Pin "Flip" Adapter Harness
 Used when replacing the following OEM control: HK42FZ018

The 11-pin inline connections for these applications are reversed or "flipped" 1 for 1 from the standard pinout. To allow for this, the "Flip" harness connects pin 1 on the control to pin 11 in the furnace, Pin 2 on control to Pin 10 in the furnace, etc.

NOTE: Using the "Flip" harness when replacing controls other than HK42FZ018 or failure to use the "Flip" harness when replacing HK42FZ018 will result in a miswiring that will cause a Limit / Rollout Switch Open Error (Code 33) and eventually a Limit / Rollout Switch Lockout (Code 13).

2

50M56U-751 Direct OEM Replacement

31

Installation – Step 8

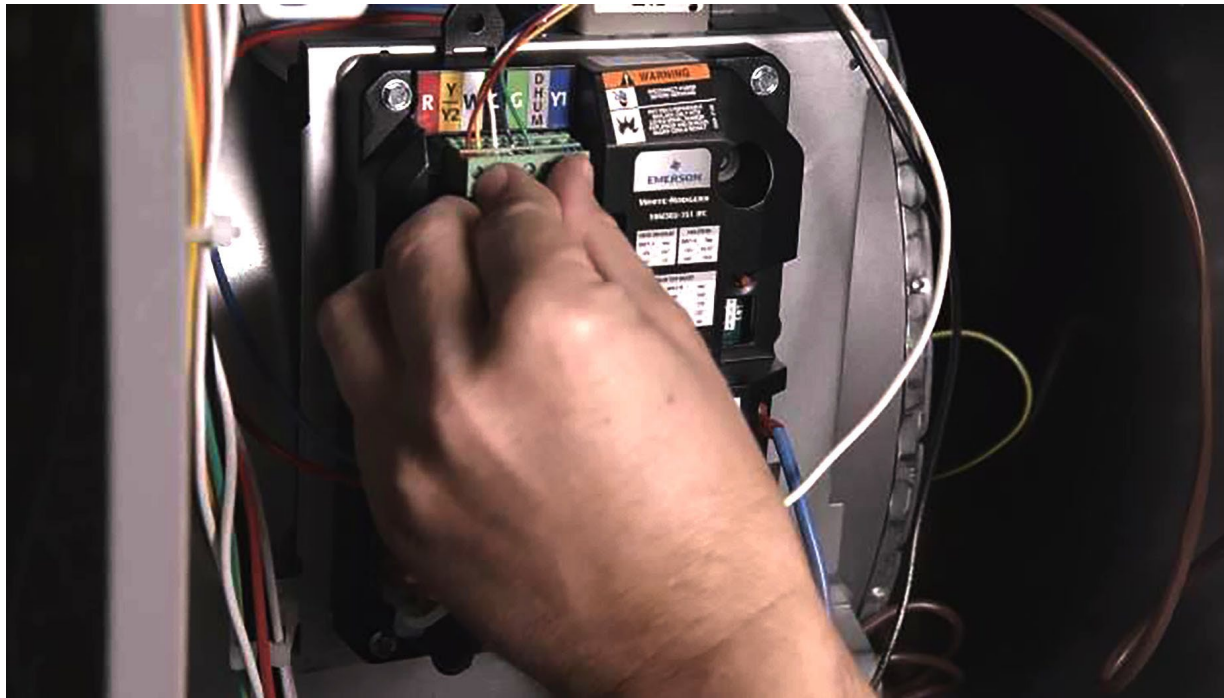
8 Wire the New Board:

- Plug in the Carrier Inline Plug
 - If required, use the 9 pin adapter harness
 - If required, use Flip Harness to connect directly to the control (ICP)
- Plug-in the 2 Pin Molex Hot Surface Inducer Plug and Neutral Wires
- Attach Blower Motor Wires
- Connect 120v Power and Neutral Transformer Wires
- Connect 120v Power and Neutral Wires
- Connect 24v Transformer wires
- Connect Carrier Inline Plug
- Remove T-Stat Block and install thermostat wires
 - Plug Block back into Control



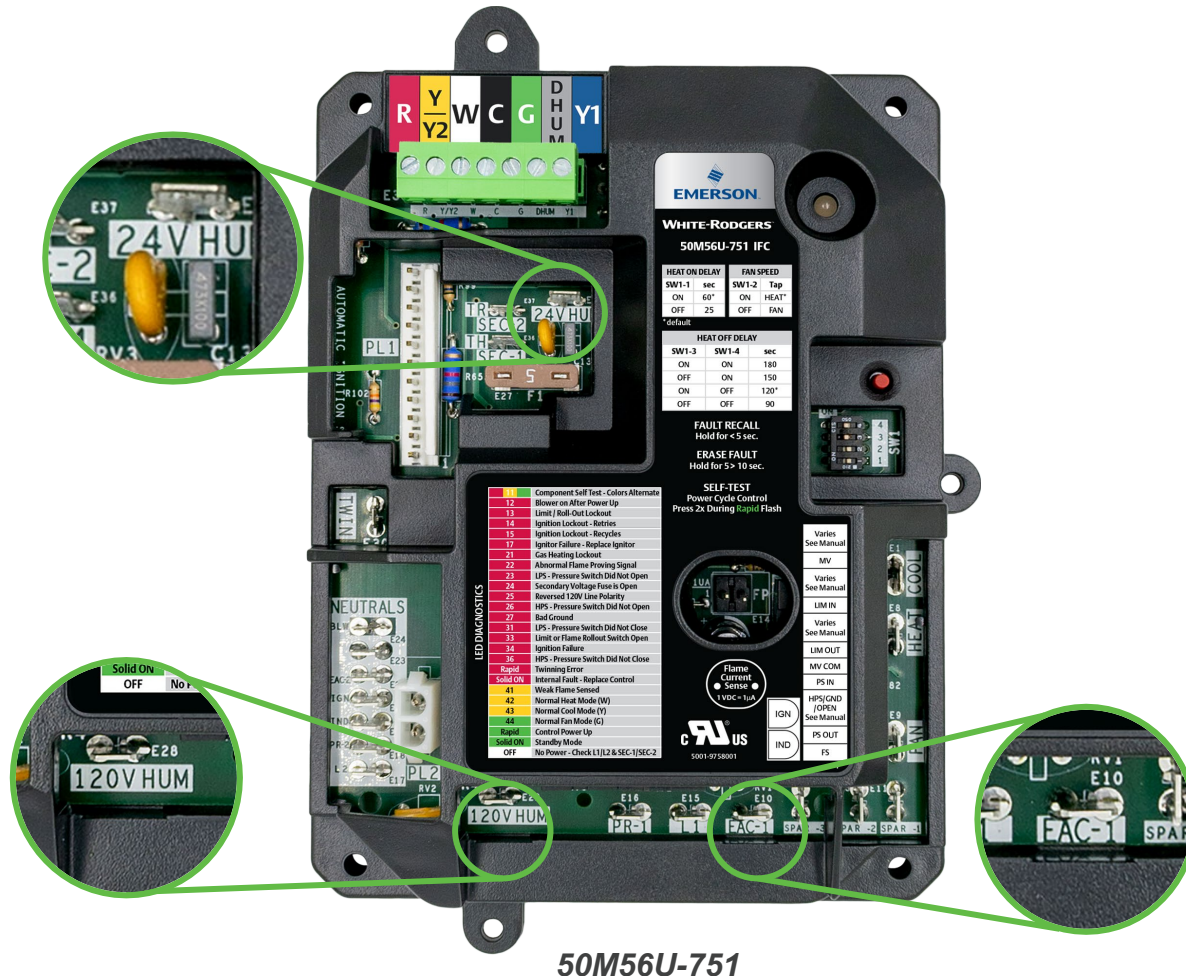
Installation – Step 9

- 9 Doublecheck Wires for sound connection, ensure unused blower wires are plugged into spare terminals.



Installation – Step 10

10 If desired, connect EAC/ Humidifier.



50M56U-751

Installation – Step 11

- 11** Tape down door switch. Reconnect the power and gas to the furnace and enter Self-Test mode.



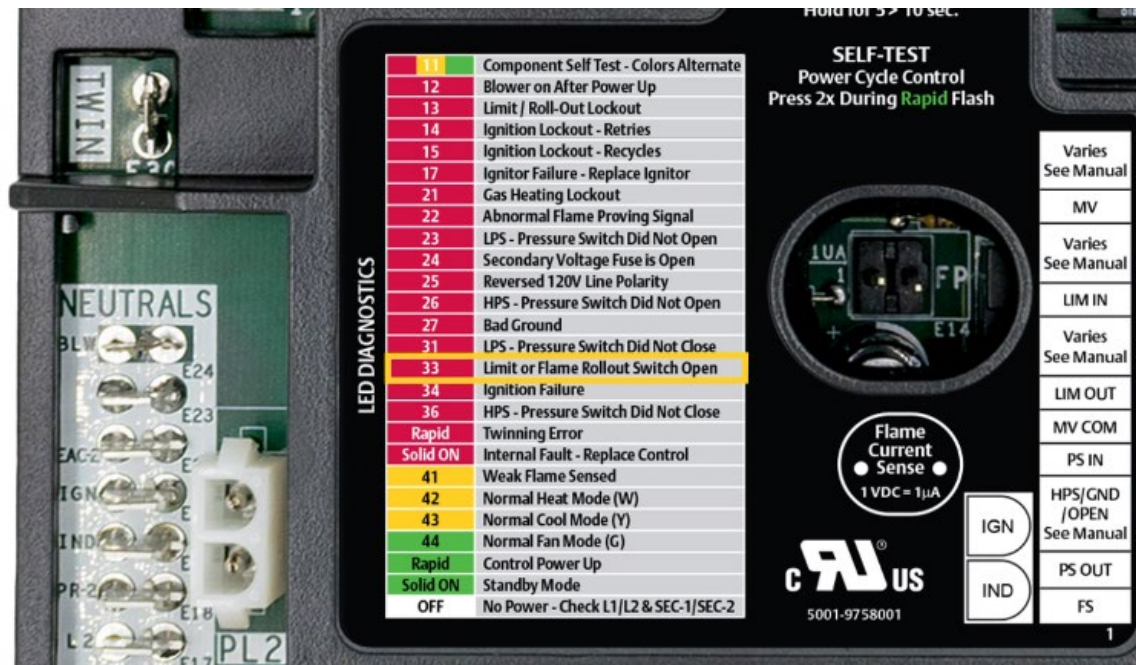
Installation – Step 12

- 12** Enter Self-Test mode by pressing fault recall button twice within three seconds. LED will flash last faults in red. During Self-Test, the LED will flash Code 11 between green, amber, and red, while doing a systems check. When complete, control goes into stand-by mode.



Installation – Step 13

13 Verify ignition by making a call for heat. If a fault is detected, reference the Tri-Color LED flash code against the fault code list on the control.



TECH TIP: Hold fault/recall button for 5-10 seconds to erase fault code history.

Installation – Step 14

14 Re-attach furnace panel, and you're good to go!



Thank you!



Test Pins

Let's build a GIF of this process from the install footage

2 pins extend from the Control Board to the surface of the Black Cover.

To Test:

- The Furnace must have a call for heat and the burners producing flame.
- Set a multimeter to vDC and place a meter probe on each pin.
- Convert vDc to MicroAmps using a 1:1 ratio.
- A good flame sense reading will be between 1.0 – 5.0 μ A.

