50F06-843 Universal Furnace Electronic Fan Timer

Product Launch – Fall 2019

EMERSON

Introducing
WHITE-ROGERS Newest Universal Replacement Control

The White-Rodgers 50F06-843 Fan Timer Control

What is an Electronic Fan Timer Control?

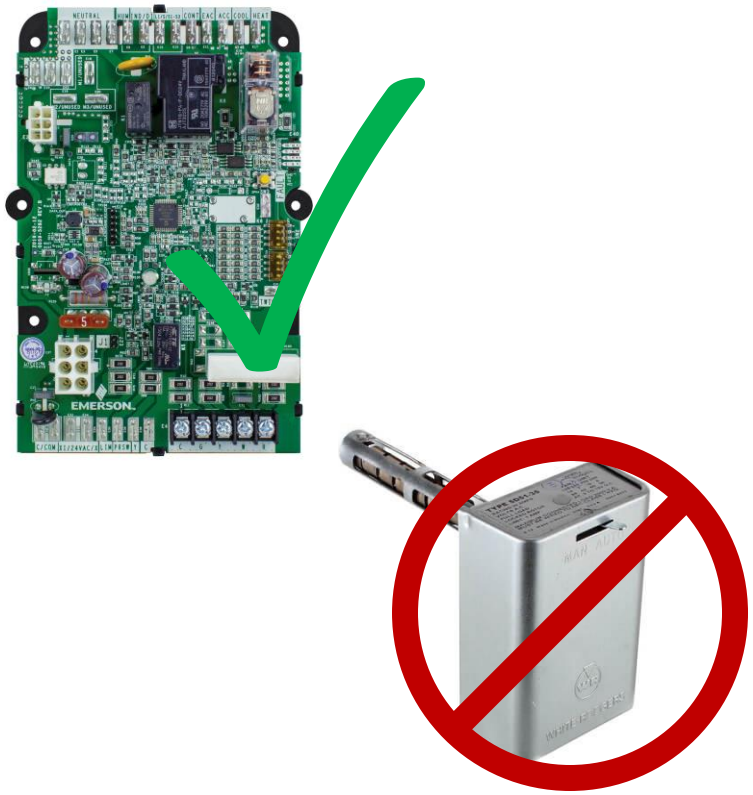
A Non-Integrated Control Board that utilizes an internal timer to turn the Furnace Blower Fan on through a timing sequence rather than a temperature sensing device.

Blower functions that are completed through an electronic timer on the Board are:

- Heat Fan Speed
- Cool Fan Speed
- Continuous Fan Circulation Speed

The 50F06-843 can also initiate the Inducer Fan and monitor Furnace operation*

*Note: Level of control depends upon model being replaced.



Easy to Install, Easy to Configure, Easy to Diagnose

Non-Integrated Furnace Electronic Fan Timer

What is “Non-Integrated”?

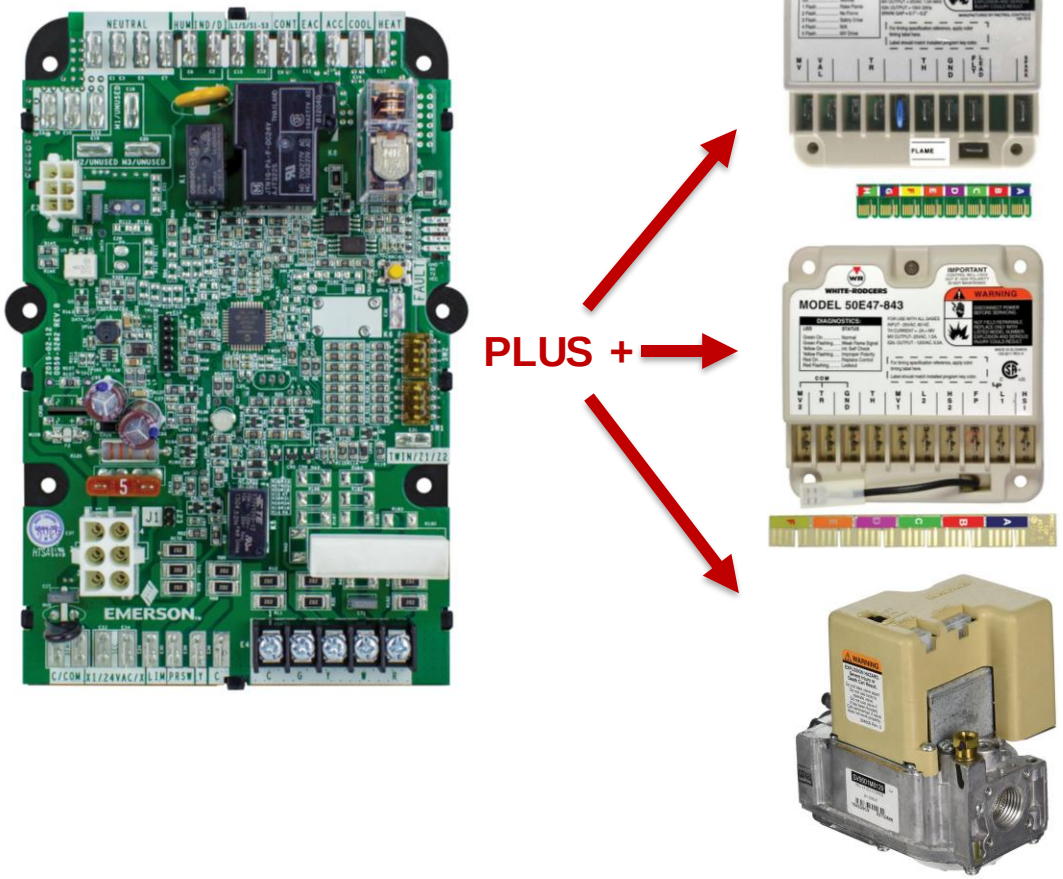
A Non-Integrated Control is a partial control that connects to another for complete operation.

The 50F06-843 will Integrate with any one of these 3 types of Ignition Controls for complete Furnace operation:

- Direct Spark Ignition Control
- Hot Surface Ignition Control
- Intelligent Gas Valve Control

The Timer controls the Fan Blower while providing Safety Circuits* to monitor Pressure Switch Safeties, Temperature Limit Safeties, Blower Failure, and Voltage Fluctuations.

*Note: Level of features depends upon model being replaced.



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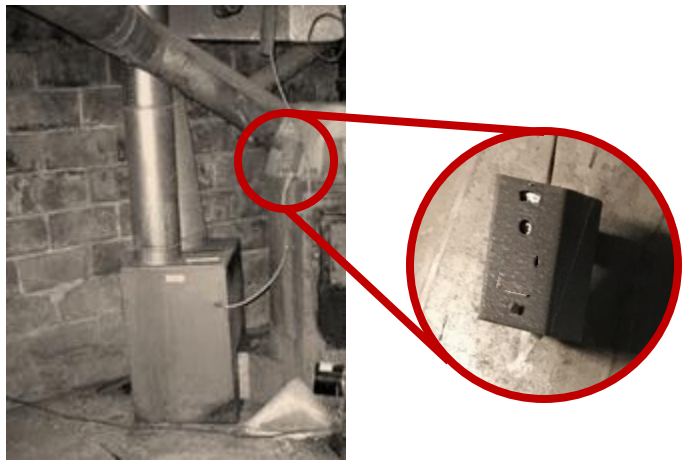
Fan Timer History

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

Fenwal introduces an Intermittent Spark ignition system to replace Standing Pilot Systems. Other companies follow over the next couple of years.

1988

Hamilton Standard Controls, Inc. – A division of UTC, patents a Furnace Blower Control that uses a microprocessor to time the fan blower on & off instead of a temperature sensing control.

1990

A fully Integrated Furnace control that controls the gas valve, gas ignition, flame sensing, blower fan operation, induced draft sensing, & limit functions is patented by Hamilton Standard Controls, Inc.

2006

Furnaces with non-integraded controls no longer manufactured

Era of Fan Timer Controls Manufactured in Furnaces

ICP produced >2M furnaces from 1994 to 2006. During this period they manufactured Furnaces using a Fan Timer Control and SmartValve™ .

Universal Fan Timer Application

Where all can this be used?

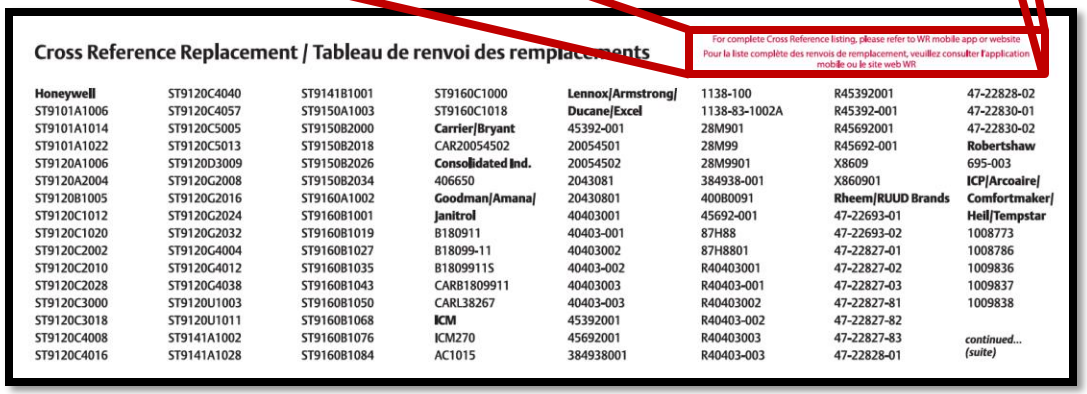
The 50F06-843 has been cross to over 150 board numbers.

References are listed on the outside of the box packaging.

White-Rodgers gives you over 150 cross-references compared to Brand X which only list 48

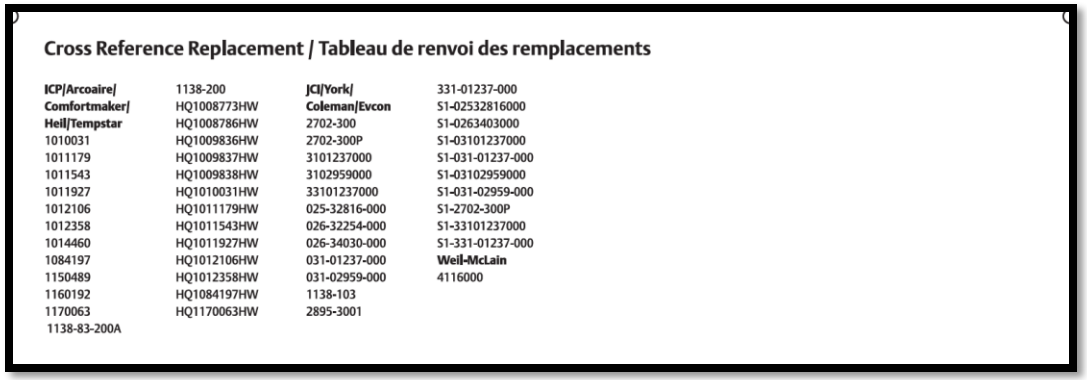
For complete Cross Reference listing, please refer to WR mobile app or website

Pour la liste complète des renvois de remplacement, veuillez consulter l'application mobile ou le site web WR



Cross Reference Replacement / Tableau de renvoi des remplacements

Honeywell	ST9120C4040	ST9141B1001	ST9160C1000	**Lennox/Armstrong/**	1138-100	R45392001	47-22828-02
ST9101A1006	ST9120C4057	ST9150A1003	ST9160C1018	**Ducane/Excel**	1138-83-1002A	R45392-001	47-22830-01
ST9101A1014	ST9120C5005	ST9150B2000	**Carrier/Bryant**	45392-001	28M901	R45692001	47-22830-02
ST9101A1022	ST9120C5013	ST9150B2018	CAR20054502	20054501	28M99	R45692-001	**Robertshaw**
ST9120A1006	ST9120D3009	ST9150B2026	**Consolidated Ind.**	20054502	28M9901	X8609	695-003
ST9120A2004	ST9120G2008	ST9150B2034	406650	2043081	384938-001	X860901	**ICP/Arcoaire/**
ST912081005	ST9120G2016	ST9160A1002	**Goodman/Amana/**	20430801	400B0091	**Rheem/RUUD Brands**	**Comfortmaker/**
ST9120C1012	ST9120G2024	ST9160B1001	**Janitrol**	40403001	45692-001	47-22693-01	**Heil/Tempstar**
ST9120C1020	ST9120G2032	ST9160B1019	B180911	40403-001	87H88	47-22693-02	1008773
ST9120C2002	ST9120G4004	ST9160B1027	B18099-11	40403002	87H8801	47-22827-01	1008786
ST9120C2010	ST9120G4012	ST9160B1035	B18099115	40403-002	R40403001	47-22827-02	1009836
ST9120C2028	ST9120G4038	ST9160B1043	CARB1809911	40403003	R40403-001	47-22827-03	1009837
ST9120C3000	ST9120U1003	ST9160B1050	CARL38267	40403-003	R40403002	47-22827-81	1009838
ST9120C3018	ST9120U1011	ST9160B1068	**ICM**	45392001	R40403-002	47-22827-82	
ST9120C4008	ST9141A1002	ST9160B1076	ICM270	45692001	R40403003	47-22827-83	*continued...*
ST9120C4016	ST9141A1028	ST9160B1084	AC1015	384938001	R40403-003	47-22828-01	*(suite)*



Cross Reference Replacement / Tableau de renvoi des remplacements

ICP/Arcoaire/	1138-200	**JCI/York/**	331-01237-000
Comfortmaker/	HQ1008773HW	**Coleman/Evcon**	S1-02532816000
Heil/Tempstar	HQ1008786HW	2702-300	S1-0263403000
1010031	HQ1009836HW	2702-300P	S1-03101237000
1011179	HQ1009837HW	3101237000	S1-031-01237-000
1011543	HQ1009838HW	3102959000	S1-03102959000
1011927	HQ1010031HW	33101237000	S1-031-02959-000
1012106	HQ1011179HW	025-32816-000	S1-2702-300P
1012358	HQ1011543HW	026-32254-000	S1-33101237000
1014460	HQ1011927HW	026-34030-000	S1-331-01237-000
1084197	HQ1012106HW	031-01237-000	**Weil-McLain**
1150489	HQ1012358HW	031-02959-000	4116000
1160192	HQ1084197HW	1138-103	
1170063	HQ1170063HW	2895-3001	
1138-83-200A			

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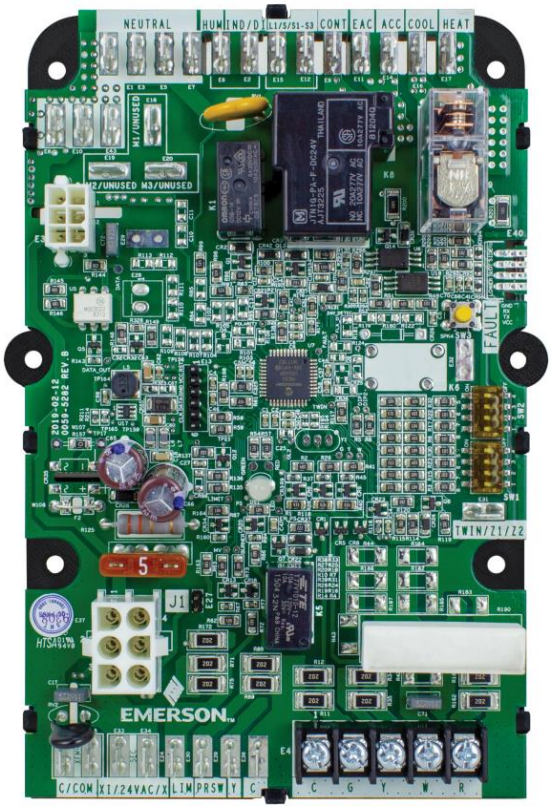
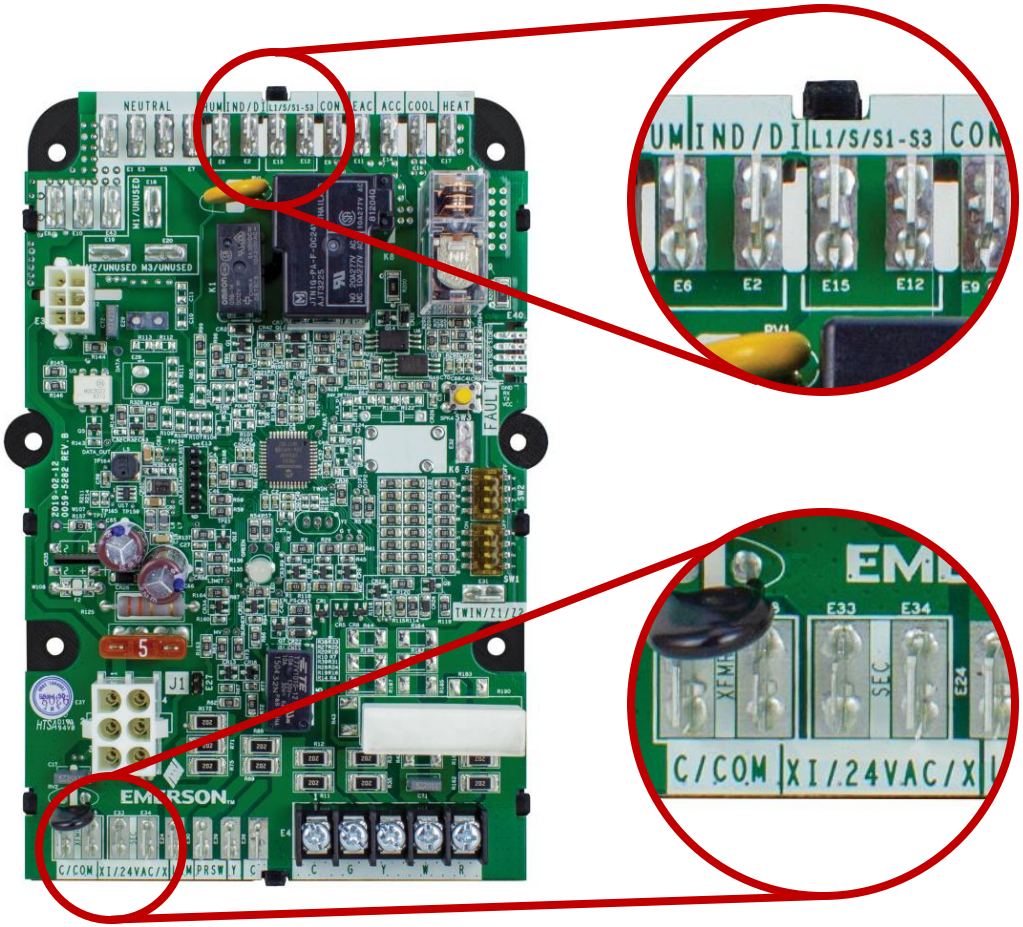
Easy to Install Mounting Options



- The raised molded base provides space between board and unit mounting plate.
- 6 mounting holes designed to match the board being replaced give multiple options for alternate mounting.
- Mounting screws are provided for multiple options.
  - 4x ¼”x1”, and 2x ¼”x½”

We match mounting holes of existing boards that are not matched by other brand replacements.

Multiple ID Terminal Labels



- On some Terminals multiple identifiers are Silkscreened on the board. All cross-over boards are identified and referenced on each Terminal, making it easy for correct placement of wires.

Only White-Rodgers gives all previous version Terminal Identifier Labels

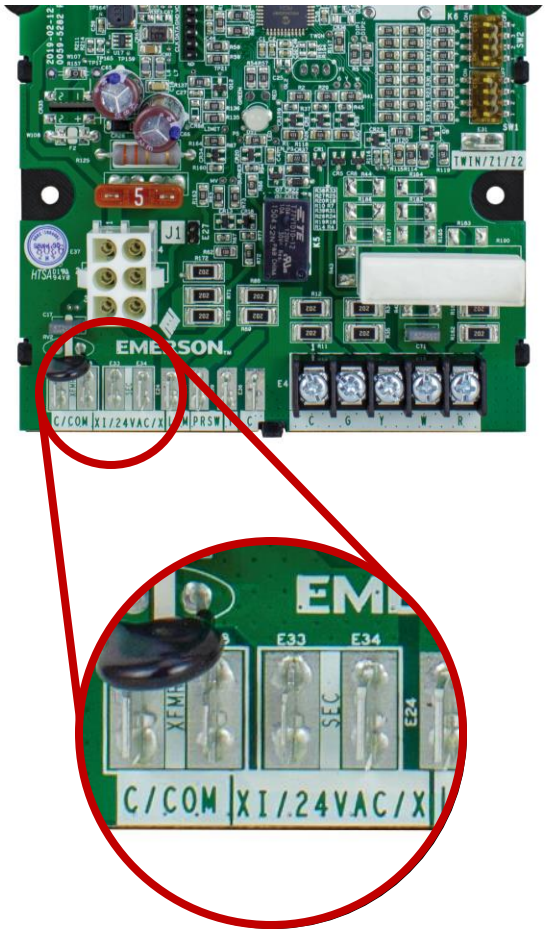
2 Sizes of 24v Power Connections

- **X1/24VAC/X** has both ¼" & 3⁄16" Terminal Connectors
  - For 24v Secondary input from 24v Transformer.
- **C/COM** has both ¼" & 3⁄16" Terminal Connectors
  - For 24v Common input from 24v Transformer.

Some older systems still have 3⁄16" spade connectors on wires from the Transformer to connect to the Board.

The 50F06-843 has these 3⁄16" terminals so the existing wire Spades don't have to be replaced.

Only White-Rodgers gives you both Spade Terminal size options to connect the existing Transformer Connector wiring.

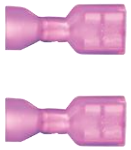


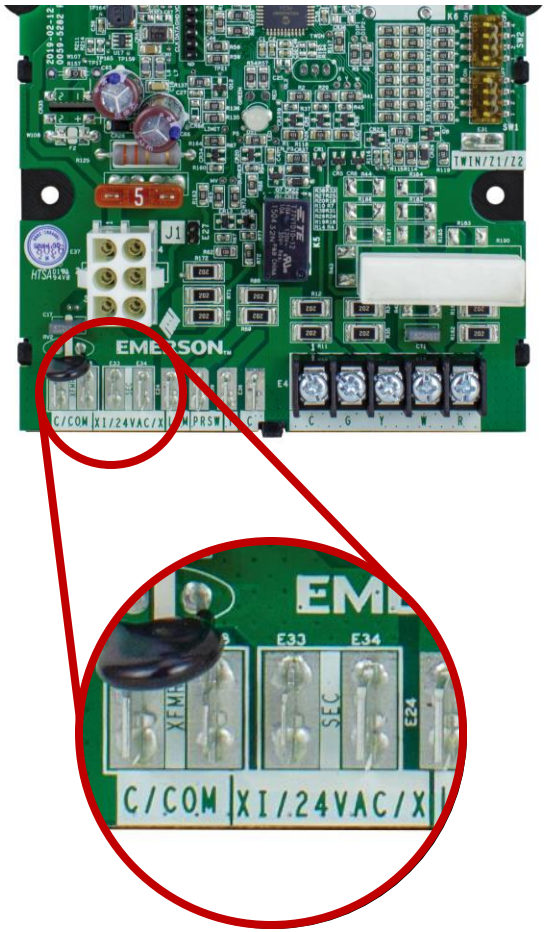
24v Transformer Extension Wires Included

Some older systems have the 24v Transformer located so that the 24v wires will not reach the 24v input Terminals on the Fan Timer.

Additional ¼” x ¼” Spade Extension Wires are included for Transformers located farther from the Control mounting location.

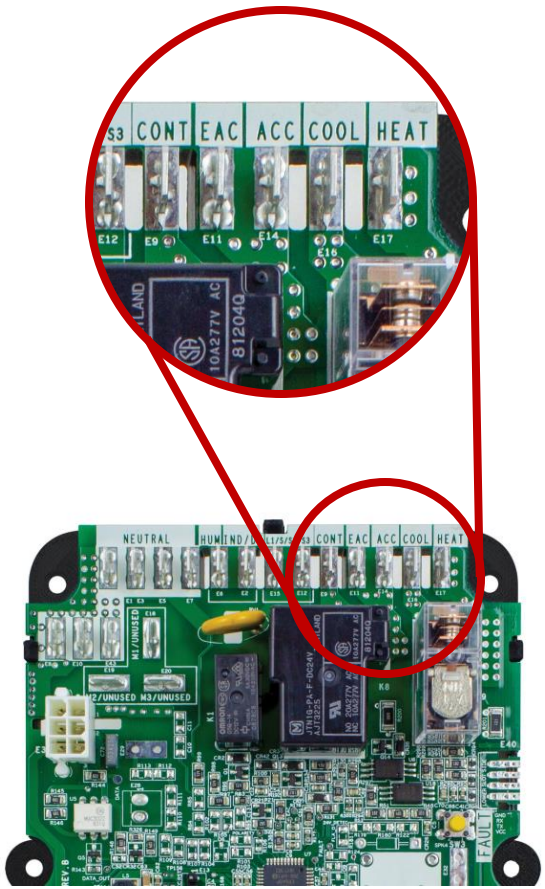
Also included are a pair of $\frac{3}{16}$” Insulated Spade Terminals for adapting the Extension wires.





Only White-Rodgers gives you 2 Wire Extensions with Spade Connectors to easily connect the existing Transformer wiring.

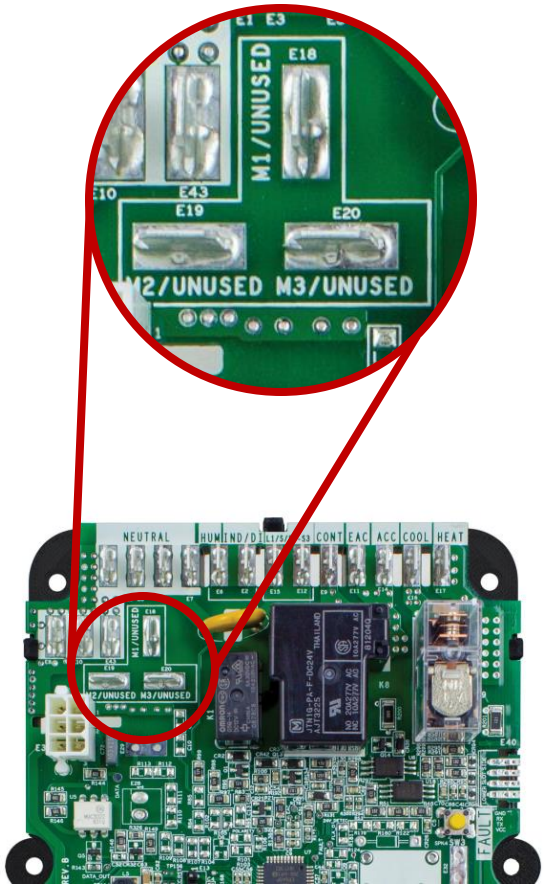
Blower Speed Output Terminals for any Application



- **HEAT:** Once the Fan timer completes the Blower Heat-On Delay, the HEAT & ACC are powered.
- **COOL:** Once the Fan timer completes the Blower Cool-On Delay, the COOL & ACC are powered.
- **ACC:** Powered anytime the HEAT or COOL is energized.
- **EAC:** Powered anytime HEAT or COOL is energized.
- **CONT:** Powered when the Fan Control Board is powered up and designed to power 24/7. Is De-energized when HEAT or COOL is powered.*
  - ***Note:** An Electronic Air Cleaner requires direct 115v power 24/7 when connecting the blower to the CONT terminal in order for it to be constantly on with the blower.

Only White-Rodgers gives you an ACC Terminal that is powered during both Heat & Cool calls for single Blower speed applications.

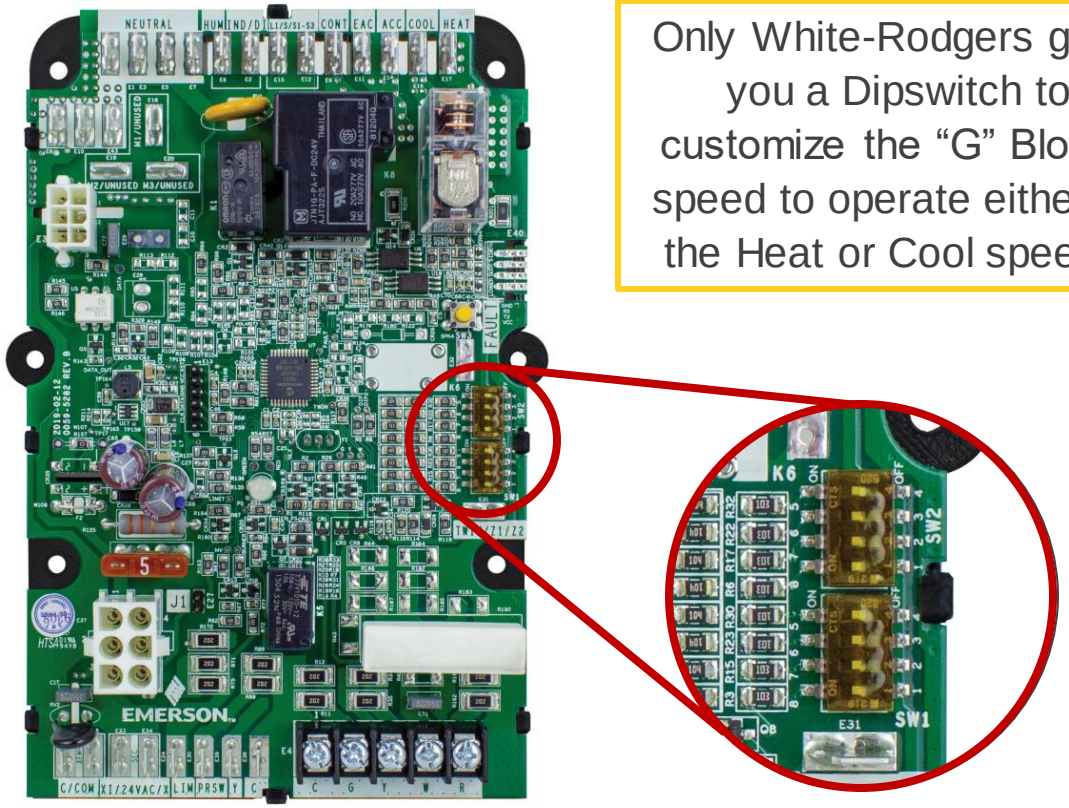
Additional Unused Blower Motor Lead / Park Terminals



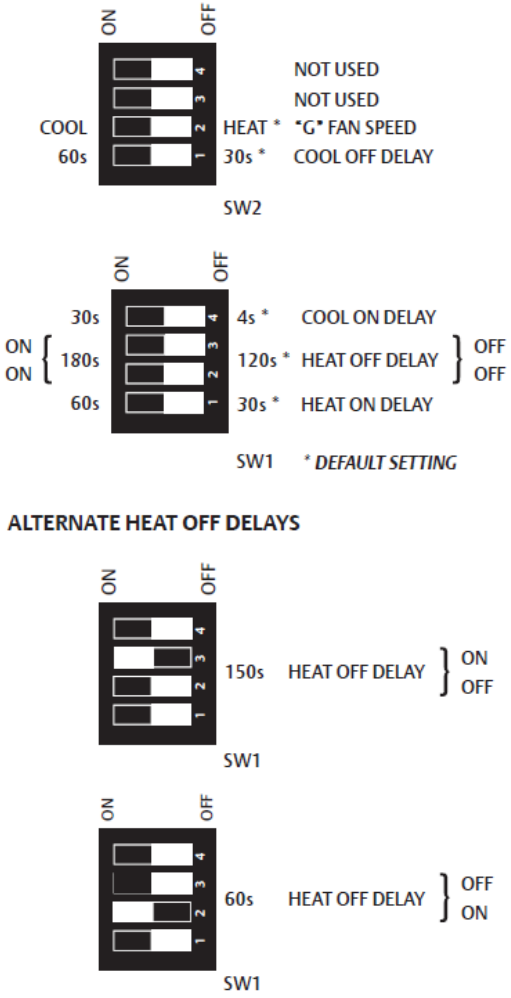
- **M1/M2/M3/UNUSED:** 3 Terminals are provided to park / place unused Blower leads.
- These Terminals allow unused Blower Motor wires that are different speeds to be “parked” without cutting off the Spade connector in case that Blower speed needs to be used and a different one parked.

White-Rodgers gives you 3 Unused Terminals compared to Brand X which only has 2.

Adjustable Fan Delays & Options w/ Dipswitch Functions



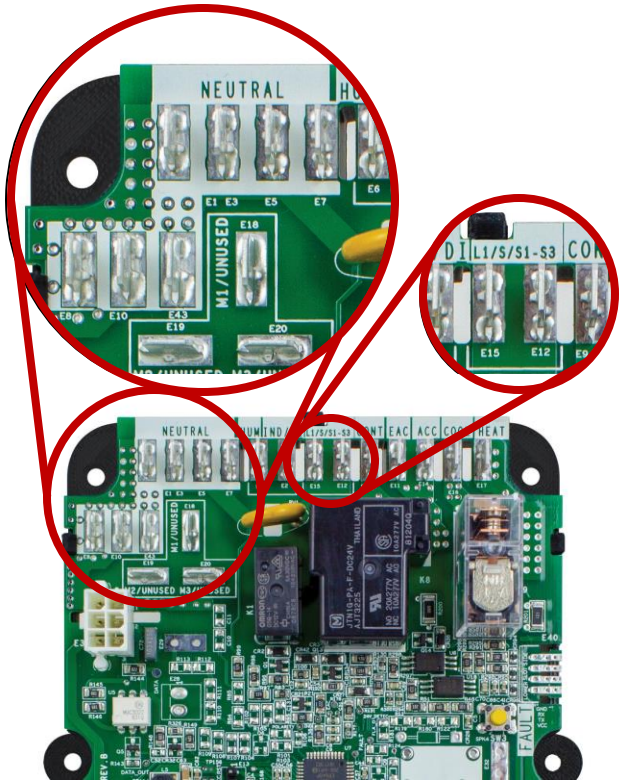
Only White-Rodgers gives you a Dipswitch to customize the “G” Blower speed to operate either on the Heat or Cool speeds.



- Board has 2 sets of Dipswitches:
  - SW1 – 4 functioning
  - SW2 – 2 functioning, 2 unused

A screwdriver can be used to change settings through protective Dipswitch cover.

All 115v/230v Power Connections on one end of Board



- **L1/S/S1-S3** has 2x ¼” Connectors
  - 115v Hot / L1-230v input from power source.
  - 115v Hot / L1-230v output to 24v Transformer.
- **Neutral** has 7x ¼” Connectors
  - 115v Neutral / L2-230v* input from power source
  - L2-230v* / 115v Neutral output to 24v Transformer
  - L2-230v* / 115v Neutral for additional 115/230v* circuits (Inducer Fan, Blower Fan, EAC, Humidifier)

*See Manufactures Equipment Wiring Diagram for correct voltage wiring.

White-Rodgers gives you 7 Neutral Terminals compared to Brand X which only has 6.

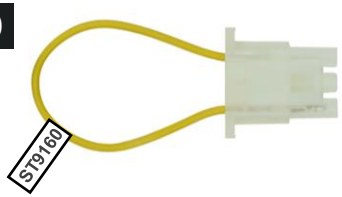
Simplified Connection Wiring Harnesses w/ ID Flags

- Port E38 is used for 2nd generation SmartValves (ST9160 Boards).
- Using Port 38 requires a ST9160 Jumper installed on Port J1.

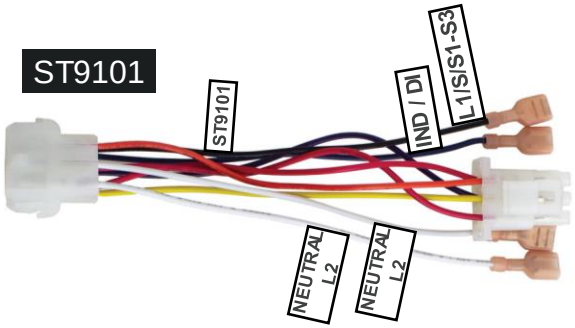
- Port J1 is used for 1st Generation SmartValves or Non-Integrated Ignition Controls.
- Additional wiring harnesses are provided for various applications.

Only White-Rodgers labels the separate leads with ID tags.

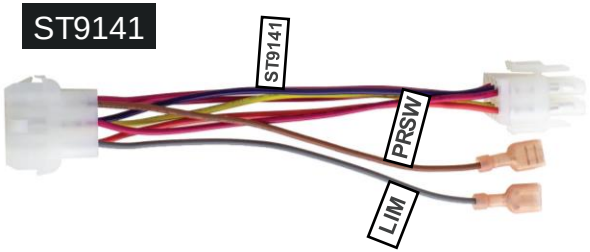
ST9160

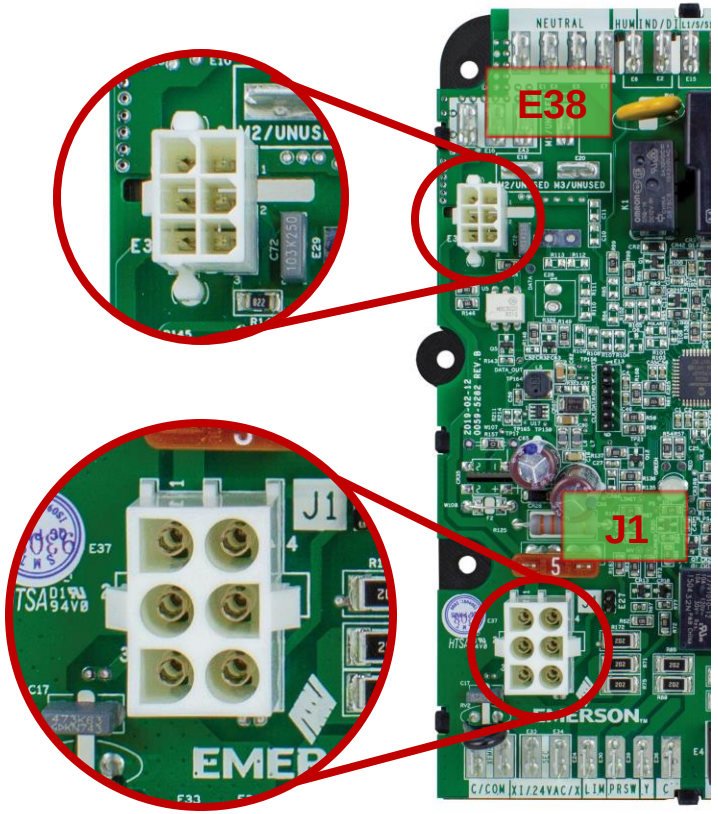


ST9101



ST9141



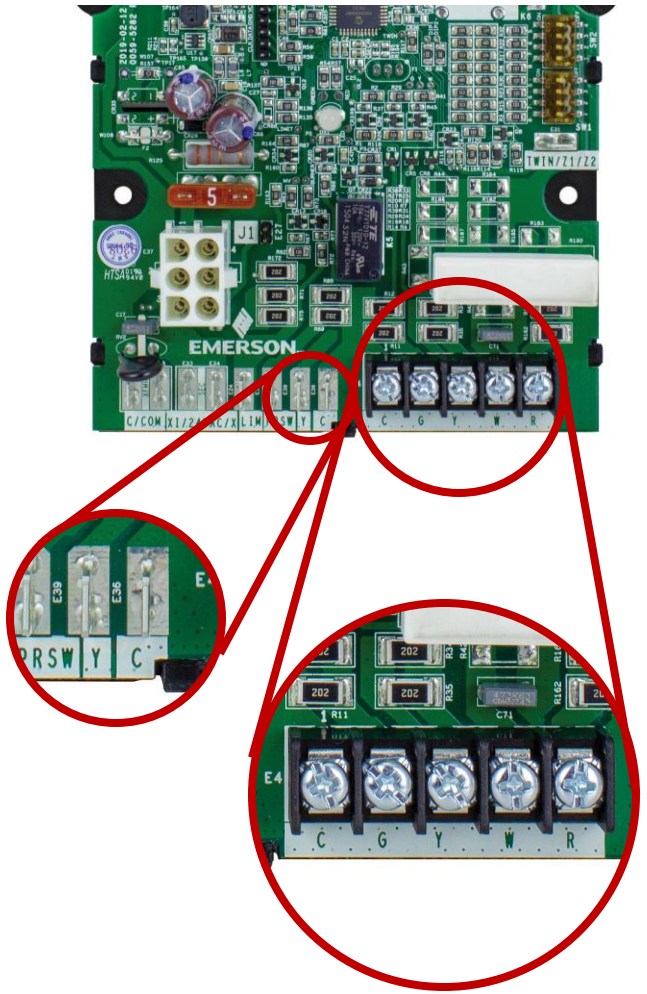


The ST9120 replacement does not require any additional wiring harnesses.

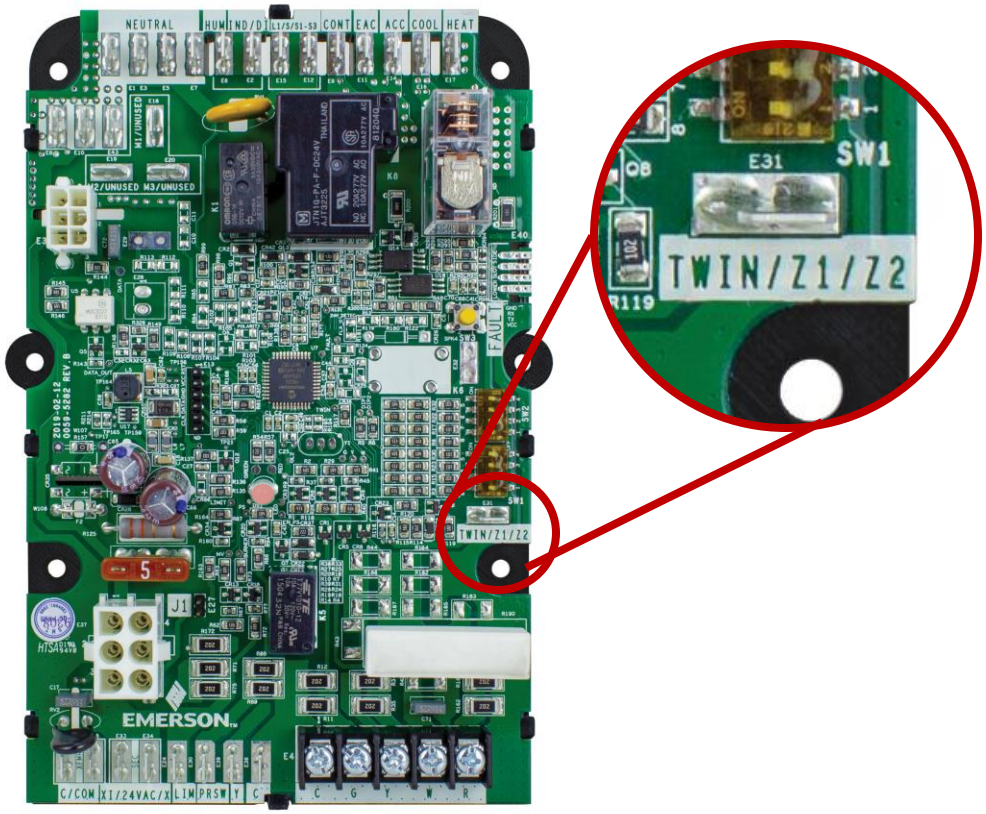
Duplicate “Y” & “C” 24v Terminal Connections

- The 24v Terminal Block has 5 standard connections:
  - “C”, “G”, “Y”, “W”, & ”R”
- Additional 24v “Y” & “C” spade terminals are internally connected on the bottom of the board. This allows for easy connection to the cooling Contactor in some applications.

White-Rodgers gives you both screw and spade Terminal connections for cooling control wiring.



Fan Blower Twinning Feature



Click to See If both Boards are not powered a Twinning fault of 6 red flashes occurs.

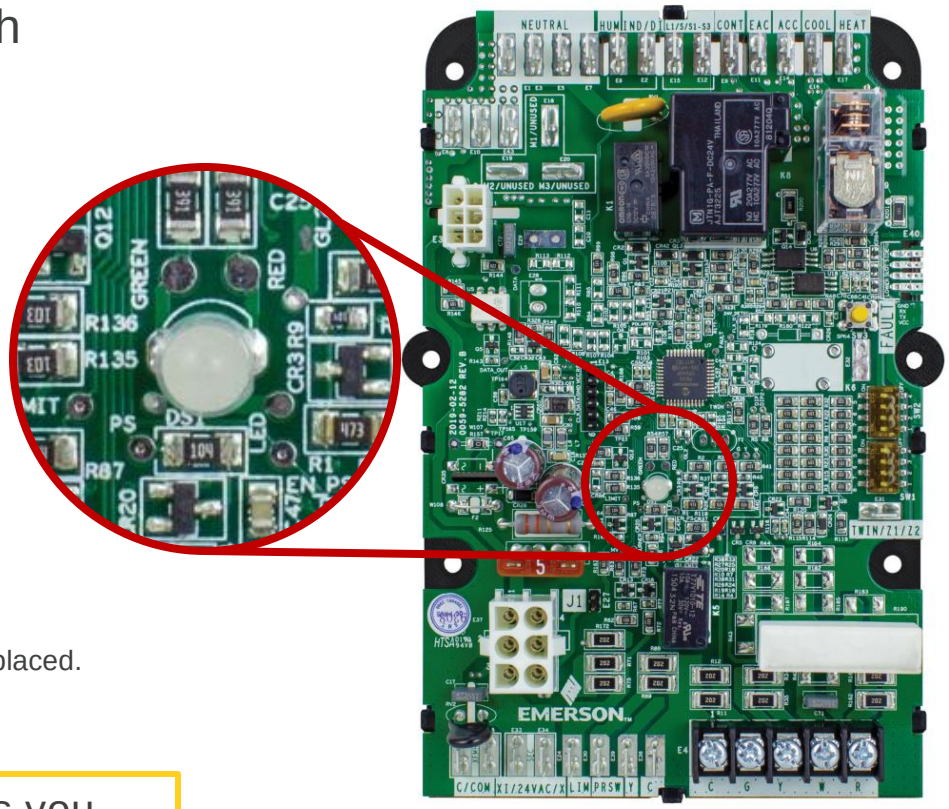
- Two 50F06-843 Fan Timer Boards can be connected to operate the Fan Circulator Blowers simultaneously.
- Twinning only requires a connection of the **Twin/Z1/Z2** Terminal on both boards using an 18ga wire.
- The Board with the Thermostat connection will fully function including the LED indicator and Dipswitch settings. The Twinned Board will operate the blower only simultaneously (LED will show standby) as determined by 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.

Tri-Color LED Status & Fault Codes – A W/R Exclusive

The 50F06-843 Communicates in Tri-Color

- A Tri-Color LED communicates with either Green, Amber, or Red:
  - The System Status
    - Standby
    - Heat
    - Cool
    - Fan
  - Trouble Fault Codes
    - Open Limit*
    - Pressure Switch*
    - Voltage Error
    - Reverse Polarity

*Note: Level of features depends upon model being replaced.



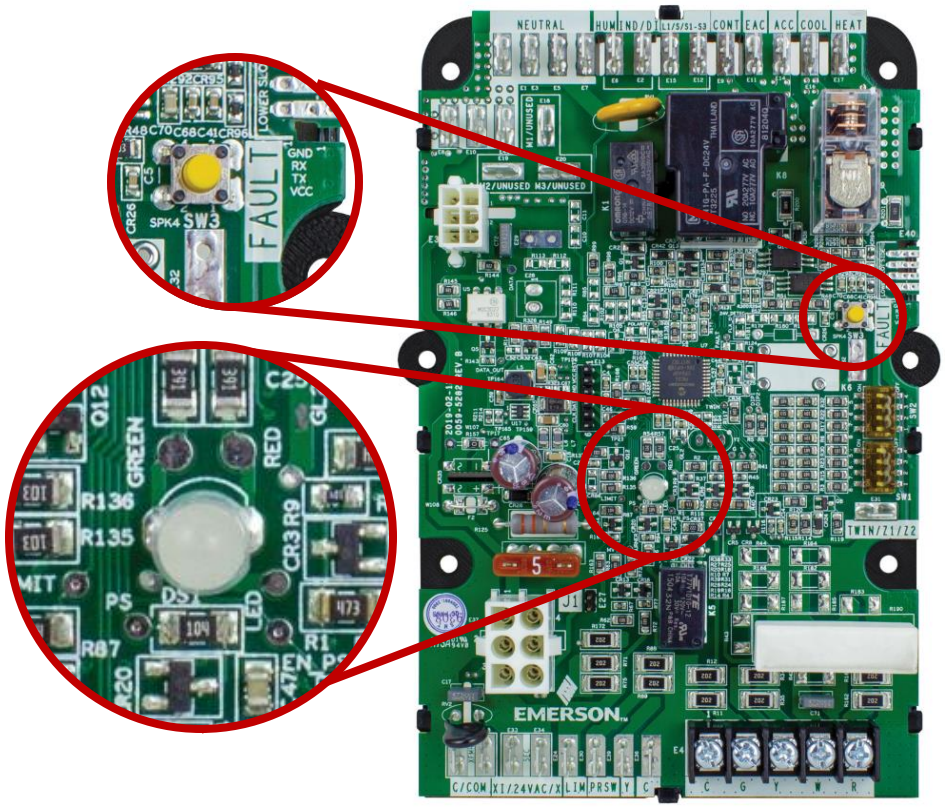
Only White-Rodgers gives you System Status information.

Tri-Color LED Status & Fault Codes – A W/R Exclusive

Troubleshooting is made easy with a Fault Code Label

TROUBLESHOOTING							
GREEN LED FLASH	AMBER LED FLASH	RED LED FLASH	ERROR / CONDITION	SYSTEM TYPE			
Up to 5 flash codes stored in memory (auto-erased after 14 days)				ST9101 ST9120	ST9141	ST9160	
		1	Limit switch, burner limit switch, or fuse is open	X	X		
		2	Primary limit switch is open		X		
		3	Pressure switch improperly closed, or open when inducer has been running >30 seconds		X		
		4	Overheated due to air not circulating (lockout). Three consecutive primary limit open events > 150 seconds.		X		
		7	Wrong 24VAC supply condition <18VAC or >30VAC for more than 10 seconds. Not detected with fault 9. Operation resumes with 120 seconds proper voltage.	X	X	X	
		8	Gas valve sensed energized when it should be off		X		
		9	Reversed 120VAC polarity / grounding	X	X	X	
Other			Additional codes displayed on gas valve LED			X	
Flash codes NOT stored in memory							
	Solid		ST9160 jumper missing, plug into connector J1			X	
OFF	OFF	OFF	Check power / internal control fault	ALL			
Alternate	Alternate	Alternate	Self-test mode active				
Rapid			Control power up				
Solid			Standby				
Continous			Fan only call (G)				
1			Call for cool (Y)				
	2		Call for heat (W)				
		6	Twinning error				

SELF-TEST - Power cycle control, press FAULT button 2x during rapid green flash
FAULT RECALL - In standby, hold FAULT button < 5 seconds
FAULT ERASE - In standby, hold FAULT button > 5 seconds but < 10 seconds
CONTROL LOCKOUT RESET - Remove 24VAC power > 10 seconds



- The Fault Button allows for:
  - Recall of the last 5 faults
  - Fault Code Erasure

Only White-Rodgers gives you Fault Recall & Clearing functions.

The Benefits of White-Rodgers 50F06-843 Fan Timer Control

Installation

- Cross references over 150 board applications
- Includes multiple Mounting Options
- Includes 2 Simplified Wiring Harnesses w/ ID flags
- ¼" & $^{3}/_{16}$" 24v Terminals for different spade connections
- Includes 24v ¼" Spade Extension Wires
- Terminal ID's cover multiple board versions
- Allows selection for Fan Only (G) to be Heating or Cooling Speed
- Allows for Heating & Cooling fan to be operated on single speed (ACC output)
- Has 3 Unused Motor / Park Terminals

Troubleshooting

- Tri-color LED displays Standby/Heat/Cool/Fan status
- Tri-Color LED displays Fault codes
- Fault Code Label identifies faults
- Fault pushbutton allows for Fault recall & for clearing of codes.

50F06-843 Competitive Comparison

FEATURE	White-Rodgers 50F06-843	Brand X ST9120B,U
Board Cross References	150+	48
Standard Mounting Options	2	1
24v Transformer ¼" Spade Extension Wires	Included	✗
Terminal label ID's cover multiple board versions	✓	✗
2 Wiring Harnesses have ID flags	✓	✗
Heating & Cooling fan can be operated on single speed (ACC output)	✓	✗
Fan Only (G) can be set to Heating or Cooling speed	✓	✗
¼" & $\frac{3}{16}$" 24v Transformer Connections	✓	✗
Unused Motor / Park Terminals	3	2
Tri-color LED display	Green – Amber - Red	Green Only
Tri-color LED displays Heat/Cool/Fan status	✓	✗
Fault code label	✓	✗
Fault recall & clearing	Simple Push Button	None

White-Rodgers has more Features

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
- Reliability of Product
  - Quality control provides reliable products
- Affordable
  - Competitive prices
- Supported by Knowledgeable Representatives
  - Contractor direct phone support

One Stop. One Solution. White-Rodgers

Comprehensive Solutions - Delivered