

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

PARTS INCLUDED

- 50M56D-751 Integrated Furnace Control
- 2 – 1/2" Sheet Metal Screws
- Installation Instructions

DESCRIPTION

50M56D-751 is an aftermarket direct replacement control kit for Carrier single stage furnace products with PSC blower motors.

TWINNING: 50M56D-751 can be twinned. The other control must also be a 50M56D-751 to ensure proper functionality.

SPECIFICATIONS & TIMINGS

ELECTRICAL RATINGS:

Input Low Voltage: 24 VAC, 60 Hz

Input Line Voltage: 120 VAC, 60 Hz, 1 ϕ

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 μ A DC*

Maximum current for non-detection: 0.1 μ A 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)

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.

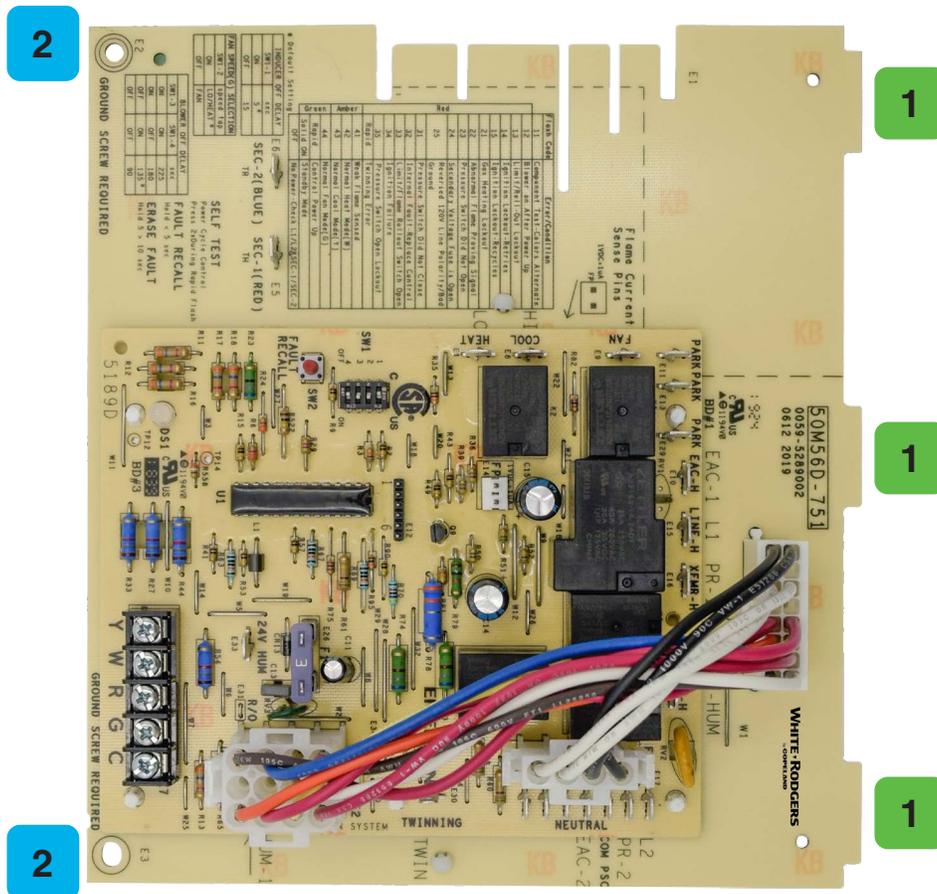


WIRING

NOTE: All wiring should be installed according to local and national electrical codes and ordinances.

1. Disconnect electrical power and shut off gas supply to unit, then remove unit access panels.
2. Mark and disconnect all wires from the existing control, then remove existing control.
3. Mount 50M56D-751 in the unit following the instructions in the **Mounting** section. Be certain not to damage any components such as wire harnesses or blower wheels when drilling or installing screws.
4. Connect all the wires back onto the 50M56D-751 control board referencing the **Wiring Diagram** section as needed.
5. Ensure all wires are secure to the control board and unused blower speed wires are attached to the PARK terminals. Apply wire ties as needed to secure wiring.
6. Verify Inducer OFF / Heat ON delay, Constant Fan Speed, and Heat OFF Delay settings, as described in the **Configuration** section.
7. Reinstall unit access panels and reconnect electric power. Restore gas supply to the unit.
8. Verify unit operation in heating, cooling, and fan only mode.

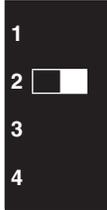
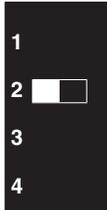
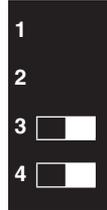
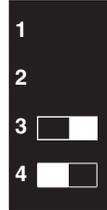
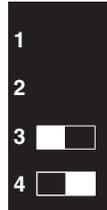
MOUNTING



1. Slide tabs into slots in sheet metal mounting bracket.
2. Align corner holes with sheet metal holes and secure with 2 1/2" screws.

NOTE: Ensure a proper ground connection is made between the control and the chassis of the furnace. The bottom of the control board underneath screw locations should make solid contact with clean metal on the mounting bracket and be secured firmly with screws to ensure proper grounding and control operation.

Dipswitch Settings

Inducer OFF / Heat ON (Blower) Delay (sec)	Constant Fan Speed	Heat OFF (Blower) Delay (sec.)
<p>SW1-1</p> <p>5 / 45*</p>  <p>OFF ON</p> <p>15 / 66</p>  <p>OFF ON</p>	<p>SW1-2</p> <p>LO/HEAT*</p>  <p>OFF ON</p> <p>FAN</p>  <p>OFF ON</p>	<p>SW1- 3 & 4</p>  <p>225</p> <p>OFF ON</p>  <p>180</p> <p>OFF ON</p>  <p>135*</p> <p>OFF ON</p>  <p>90</p> <p>OFF ON</p>

*Default

NOTE:

SW 1-1 selects both the inducer OFF delay and heat ON delay simultaneously. For example, the default setting (switch ON) sets the inducer OFF delay to 5 seconds and the Heat ON delay for the blower to 45 seconds.

SELF TEST

Enter Self-Test immediately after control power up by:

- Double pressing the “FAULT RECALL” button while LED rapid flashes green.

NOTE: Control will terminate Self-Test mode if any system fault occurs. Control will ignore any active thermostat calls during Self-Test.

- **Sequence is as follows:**
- LED will flash all stored fault codes five times. If there are no faults, the LED will be off for 2 seconds.
- Afterward, the LED will slowly flash code 11 in alternate

colors (green, amber, red) to indicate Self-Test is active. This will continue until Self-Test is complete.

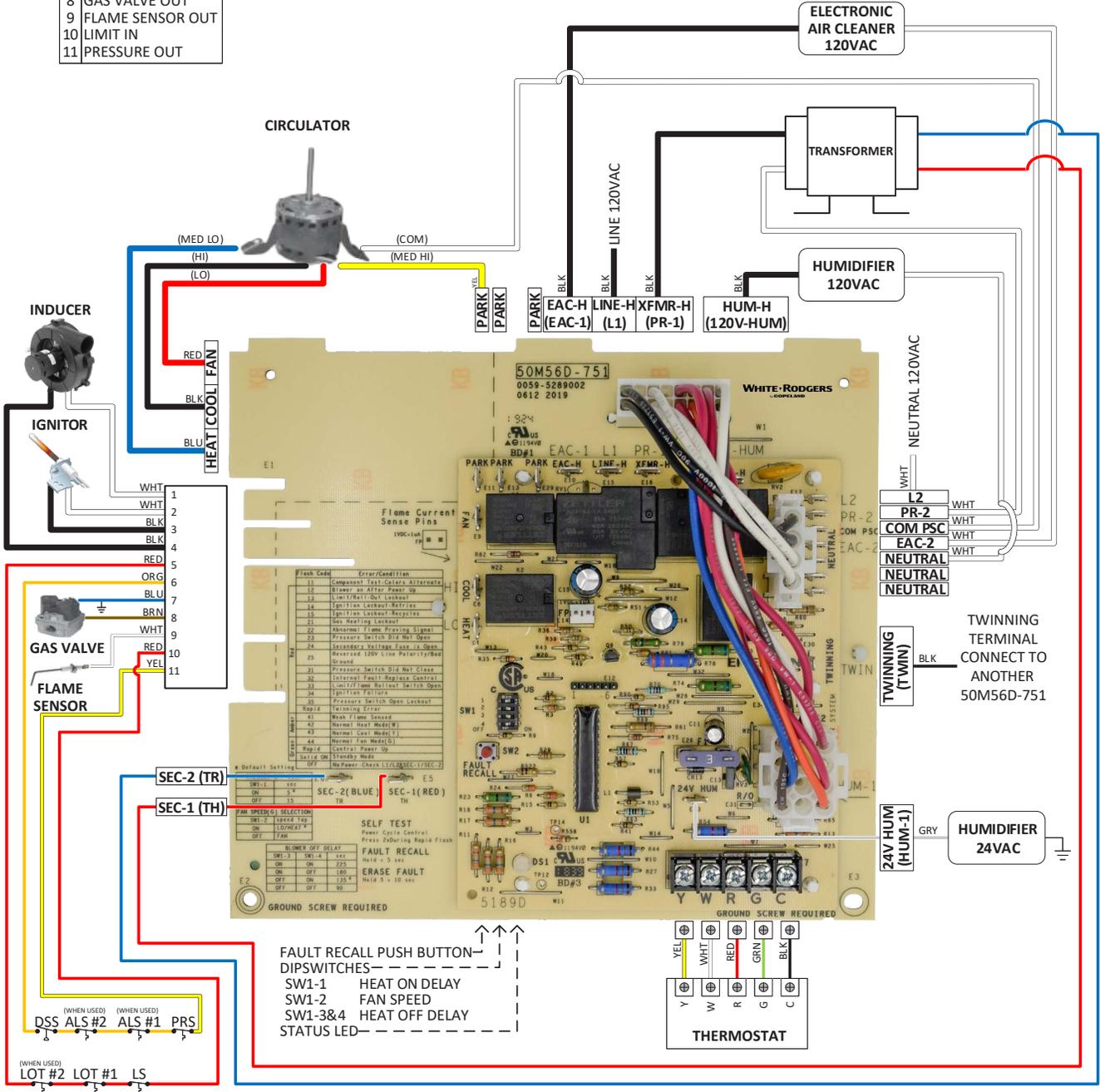
- Inducer motor will turn ON and continue running until Self-Test is complete.
- After 15 seconds, the ignitor will turn ON for 15 seconds, then OFF.
- Blower motor runs at the Fan (SW1-2), Heat, and Cool speeds respectively for 10 seconds each.
- Blower and Inducer motors turn OFF.
- Self-Test is complete, LED will display solid green to indicate Standby mode.

WIRING DIAGRAM

11 PIN FUNCTIONS

#	DESCRIPTION
1	INDUCER NEUTRAL
2	IGNITOR NEUTRAL
3	IGNITOR HOT
4	INDUCER HOT
5	LIMIT OUT
6	PRESSURE IN
7	GAS VALVE COM
8	GAS VALVE OUT
9	FLAME SENSOR OUT
10	LIMIT IN
11	PRESSURE OUT

LEGEND	
ALS #1	Auxiliary Limit Switch - Manual Reset
ALS #2	Auxiliary Limit Switch - Automatic Reset
DSS	Draft Safeguard Switch
LOT #1	Limit Overtemperature - Manual Reset
LOT #2	Limit Overtemperature - Manual Reset
LS	Limit Switch, Overtemperature - Auto Reset
PRS	Pressure Switch



NOTE: The factory installed wiring harness on the 4, 12, and 16 pin connectors must remain in place for the control to function.

HEAT MODE

Output	Standby	Call for Heat	Self-Check	Pre-Purge	Ignitor Warm-up (Adaptive, starts at 17s)	Ignition Activation Period	Blower Heat ON Delay (*Default)	Heating until Thermostat is Satisfied	Post-Purge	Blower Heat Off Delay (*Default)	Standby
				15 s	5-21 s	3 s	*45, 66 s		*5/15 s	90, *135, 180, 225	
Thermostat - W											
Inducer											
Pressure Switch											
Ignitor											
Gas Valve											
Flame Sensor											
Blower (Heat Speed)											
Humidifier (24V)											
Humidifier (120V)											
EAC											
LED	On	Amber LED - 42 Flash							Green LED – Solid On		

Fan

- The constant fan speed (G) is determined by the fan speed tap selected with dipswitch SW1-2 (LO/HEAT speed is default).
- There is a 1 second blower ON delay and a 1 second blower OFF delay for a fan only demand.
- Set thermostat to Fan ON for continuous fan.

Air Conditioner & Heat Pump

- Systems retrofitted with 50M56D-751 can be paired directly with either a single stage air conditioner or heat pump.
- 50M56D-751 will provide auxiliary heating during a heat pump defrost cycle if it receives heat and cool calls simultaneously (W + Y).

Cool On / Off Delays

- Cool blower ON delay is 2 seconds.
- Cool blower OFF delay is 90 seconds.

TROUBLESHOOTING

Fault Recall

When the control is in standby mode, press and hold the "FAULT RECALL" button for about 3-5 seconds until the solid green LED turns off, then release the button.

NOTE: While displaying the stored fault codes, the control will ignore any new call for heat, cool, or fan.

Fault Code Reset

When the control is in standby mode, press and hold the "FAULT RECALL" button until the diagnostic LED

begins to rapid flash for about 7-10 seconds then release the button.

The LED will turn off for 2 seconds after fault codes are erased. Faults will automatically be cleared from memory after 14 days.

NOTE: If the switch is held pressed for over 10 seconds, faults will not be cleared, rapid flash will stop, and the LED will be solid green to indicate return to standby.

OPERATION

Green LED Flash	Amber LED Flash	Red LED Flash	Error / Condition
Up to 5 Flash Codes Stored in Memory (Auto-Erased After 14 Days)			
		13	Limit / Roll-Out Lockout
		14	Ignition Lockout - After 3 Retries
		15	Ignition Lockout - After 10 Recycles
		21	Gas Heating Lockout
		22	Abnormal Flame Proving Signal
		23	Pressure Switch Did Not Open
		24	Secondary Voltage Fuse is Open
		25	Reversed 120V Line Polarity / Bad Ground
		31	Pressure Switch Did Not Close
		32	Ignitor Failure or Ignitor Relay Failure
		33	Limit or Flame Rollout Switch Open
		34	Ignition Failure
Flash Codes NOT Stored in Memory			
		12	Blower on After Power Up
		Rapid	Twinning Error
		Solid ON	Internal Fault - Replace Control
11	11	11	Component Self Test - Colors Alternate
OFF	OFF	OFF	No Power - Check L1/L2 & SEC-1/SEC-2
	41		Weak Flame Sensed
	42		Normal Heat Mode (W)
	43		Normal Cool Mode (Y)
44			Normal Fan Mode (G)
Rapid			Control Power Up - Test Mode Entry
Solid ON			Standby Mode
<p>Two Digit Flash Codes: The 1st digit is the number of short flashes, the 2nd digit is the number of long flashes Example: Ignition failure would display on the Red LED as 3 short flashes followed by 4 long flashes</p>			

Control Reset

Control reset is automatic after 1 hour in lockout. Removing 24 VAC power to the control for greater than 10 seconds will manually reset the control.

Flame Current Test

Set multimeter to DC volts and place leads on the flame current sense pins. Read the voltage directly as microamps (1 VDC = 1 μ A) with the burners on.

Reading results: 0.5 – 1.0 = marginal,
1.0 – 5.0 = good.

TECHNICAL SUPPORT: 1-888-725-9797