

21M51U-843 Kit

- Includes:
- Module
 - HotRod Ignitor Kit



21M51U-843 UNIVERSAL INTEGRATED HSI FURNACE CONTROL KIT

Replaces White-Rodgers 50M51-242 and 50M61-XXX's Two-Stage HSI Systems with 80V or 120V Ignitors

FEATURES

- 120 VAC 3-speed PSC (Permanent Split Capacitor) circulator output, two-speed inducer output, two-stage gas valve output.
- Pushbutton fault history retrieval.
- Furnace status LED – tri-color (green, red and amber).
- Heat fan off delay (dipswitch selectable), fan on delay for cooling.
- Auto second stage delay (dipswitch selectable).
- 120 VAC humidifier output/120 VAC electronic air cleaner output.

SPECIFICATIONS

Electrical Rating:

Input Voltage 24 VAC, 60 Hz (Class II transformer required)
 Nom. Input Current @ 24 VAC 530 mA + MV

Relay Load Ratings:

Gas Valve Relays 1.5 amps @ 24 VAC, 60 Hz
 Inducer Relays 2.2 FLA – 3.5 LRA @ 120 VAC
 Circulator Relays 14.5 FLA – 25.0 LRA @ 120 VAC
 Humidifier Load 1.0 amp max. @ 120 VAC
 Electronic Air Cleaner Load 1.0 amp max. @ 120 VAC
 Ignitor Relay 4.0 amps max. @ 132 VAC, 60 Hz

Flame Current Requirements:

Minimum current to insure flame detection 0.3 µA DC*
 Maximum current for non-detection 0.1 µA DC*
 Maximum allowable leakage resistance 100 M ohms

*Measured with a DC microammeter in the flame probe lead

Operating Temperature Range -40° to 175°F (-40 to 80°C)
 Humidity Range 5% to 93% relative humidity (non-condensing)
 Flame Failure Response Time 2.0 sec. max. @ 60Hz

TECHNICAL HELP

Wiring Diagram/Operation See pages 179–180

Model Number	Pre-Purge	Ignitor Warm-Up	Retries	Heat Delay to Fan ON	Heat Delay to Fan OFF	Cool Delay to Fan ON	Cool Delay to Fan OFF	Automatic Reset Time
21M51U-843	15	17	2	45	90/120/150/180	5	60	60 minutes

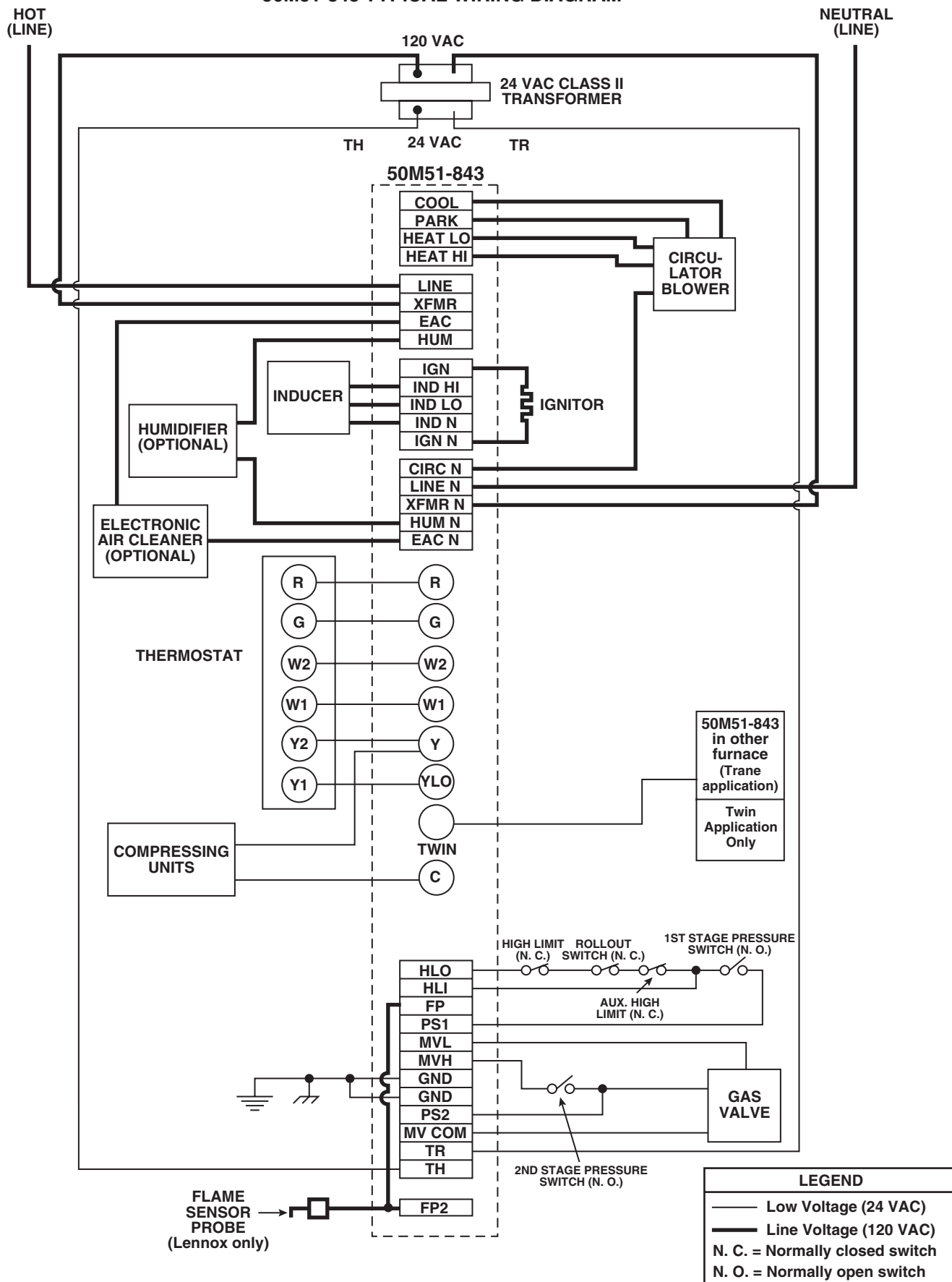
CROSS REFERENCE

21M51U-843 Replaces:

18M3401	50M61-495
20300001	50M61-843
20300003	83L9301
21M51U-843	CNT03077
46M9901	CNT6424
50M51-242	D344301P01
50M51-495	PCBBF120S
50M61-120	PCBBF125
50M61-288	X13650839010
50M61-289	

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50M51-843 TYPICAL WIRING DIAGRAM



DIAGNOSTIC TABLE

Green LED Flash	Amber LED Flash	Red LED Flash	Error/Condition	Comments/Troubleshooting
		1	Flame sensed when no flame should be present	Verify the gas valve is operating and shutting down properly. Flame in burner assemble should extinguish promptly at the end of the cycle. Check orifices and gas pressure.
		2	Pressure switch stuck closed/ inducer error	Pressure switch stuck closed. Check switch function, verify inducer is turning off.
		3	1st-stage pressure switch stuck open/inducer error	Check pressure switch function and tubing. Verify inducer is turning on the pulling sufficient vacuum to engage switch.
		4	Open limit switch	Verify continuity through rollout switch circuit.
		5	Open rollout/open fuse detect	Verify continuity through rollout switch circuit, check fuse.
		6	1st-stage pressure switch cycle lockout	if the first stage pressure switch cycles 5 times (open, closed) during one call for heat from the thermostat the control will lockout. Check pressure switch for fluttering, inconsistent closure or poor vacuum pressure.
		7	External lockout (retries)	Failure to sense flame is often caused by carbon deposits on the flame sensor, a disconnected or shorted flame sensor lead or a poorly grounded furnace. Carbon deposits can be cleaned with emery cloth. Verify sensor is not contacting the burner and is located in a good position to sense flame. Check sensor lead for shorting and verify furnace is grounded properly.
		8	External lockout (ignition recycles exceeded where flame is established and then lost)	Check items for exceeded retries listed above and verify valve is not dropping out allowing flame to be established and then lost.
		9	Grounding or Reversed polarity	Verify the control and furnace are properly grounded. Check and reverse polarity (primary) if incorrect.
		10	Module gas valve contacts energized with no call for heat	Verify valve is not receiving voltage from a short. If a valve wiring is correct and condition persists, replace module.
		11	Limit switch open – possible blower failure overheating limit	Possible blower failure, restricted air flow through appliance or duct work. Verify continuity through limit switch circuit and correct overheating cause.
		12	Module Ignitor contact failure	Fault code indicates the module ignitor contacts are not functioning properly. Replace module.
		Solid	Module - internal fault condition	Module contacts for gas valve not operating or processor fault. Reset control. if condition persists replace module.
		Rapid	Twining error	Check wire connections. If condition persists, replace module.
		3 double	2nd-stage Pressure Switch Stuck Open/Inducer Error	Check pressure switch function and tubing. Verify inducer is turning on and pulling sufficient vacuum to engage switch.
	1		Normal Operation with call for first stage heat	Normal operation - first stage
	2		Normal Operation with call for second stage heat	Normal operation - first stage
	3		W2 present with no W1	Second stage call for heat on thermostat circuit with no call for first stage. Verify dip switches are set for two stage thermostat and check thermostat first stage circuit. Configured for a multi-stage thermostat the Module will not initiate heating unless first stage call from thermostat is received.
	4		Y present with no G call	Module will allow cooling to operate with only a "Y" signal from the thermostat but will also trigger this code. Verify thermostat is energizing both "Y" and "G" on call for cool. Check "G" terminal connections.
	Rapid		Low flame sense current	Low flame sense current is often caused by carbon deposits on the flame sensor, a poorly grounded furnace or a mis-aligned flame sense probe. Carbon deposits can be cleaned with emery cloth. Check for improve furnace and module ground. Verify sensor is located in or very near flame as specified by the appliance manufacturer.
1			Standby or Call for Cool	Normal operation. Waiting for call from thermostat or receiving thermostat call for cool.

LAST FAULT MODE

To retrieve fault codes, push and release the "LAST ERROR" button for more than 1/5 second and less than 5 seconds. (Control will indicate this period by solid GREEN for 1/5 to 5 seconds). The LED will flash up to five stored fault codes, beginning with the most recent. If there are no fault codes in memory, the LED will flash two green flashes. The control will flash the most recent error first and the oldest error last (last in first out). There shall be 2 seconds between codes. Solid LED error codes will not be displayed.

DIAGNOSTIC FEATURES

The 50M51 control continuously monitors its own operation and the operation of the system. If a failure occurs, the red LED on the control will flash a failure code. **If the failure is internal to the control, the light will stay on. 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 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.)

During a second-stage error condition, the red LED when in lockout will flash groups of double pulses. The red LED will flash on for approximately 1/15 second then off for 1/15 second then on for 1/15 second, then off for 3/10 second. The pause between groups of flashes is approximately 2 seconds.