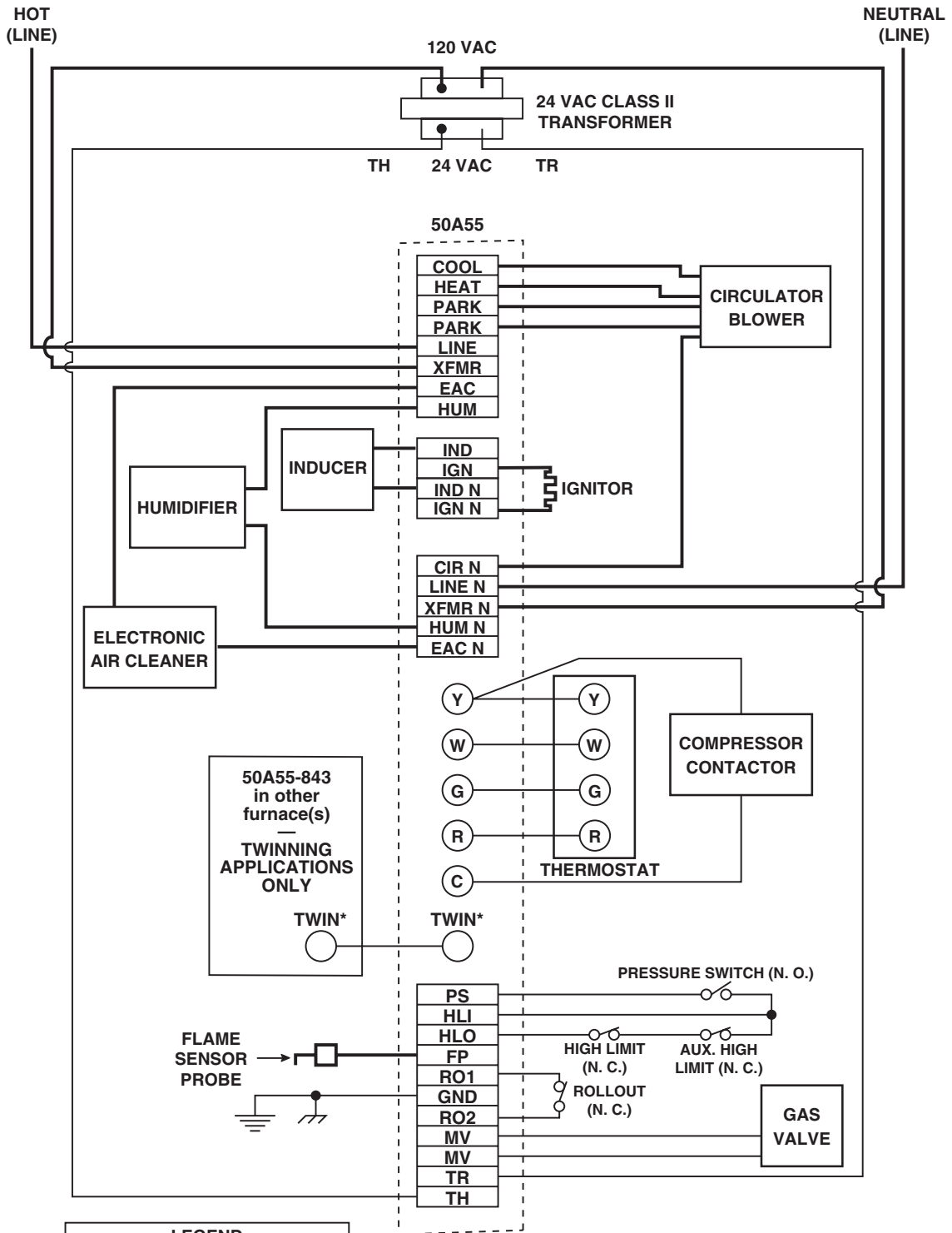


50A55-843 TYPICAL SYSTEM WIRING DIAGRAM



LEGEND	
	Low Voltage (24 VAC)
	Line Voltage (120 VAC)
	N. C. = Normally closed switch
	N. O. = Normally open switch

Flame Current Requirements:
 Minimum current to insure flame detection..... 1 µA DCⓂ
 Maximum current for non-detection..... 0.1 µA DCⓂ
 Maximum allowable leakage resistance..... 100 M ohms
 Flame establishing time..... 0.8 seconds maximum
 Flame failure response time..... 2.0 seconds maximum
 Ⓜ Measured with a DC microammeter in the flame probe lead

TECHNICAL HELP

The 50A55-843 is an automatic gas interrupted ignition control that employs a microprocessor to continually monitor, analyze, and control the proper operation of the gas burner, inducer, and fan.

Signals interpreted during continual surveillance of the thermostat and flame sensing element initiate automatic ignition of the burner, sensing of the flame, and system shut-off during normal operation.

OPTION SWITCHES

The option switches on the 50A55-843 control are used to determine the length of the cool delay-to-fan-off, heat delay-to-fan-on and heat delay-to-fan-off periods. The following table shows the time periods that will result from the various switch positions.

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 #4		
	60 sec.	On	On
	90 sec.	Off	On
	120 sec.	On	Off
	180 sec.*	Off	Off

* Factory setting

HEAT MODE

In a typical system, a call for heat is initiated by closing the thermostat contacts. This starts the 50A55 control's heating sequence. The inducer blower and optional humidifier are energized and the ignitor is powered within one second.

This controller has an adaptive algorithm that adjusts the duration of the ignitor warm-up, to extend ignitor life. Upon initial application of power, the warm-up time is 17 seconds. The ignitor on-time will then be increased or decreased depending on whether or not flame is achieved. The warm-up time is limited to a maximum of 21 seconds. During the first 64 warm-up periods following power-up, the warm-up time may not be less than 17 seconds.

Upon a call for heat, if the warm-up time has not been locked, it will be decreased by one second. This reduction of the ignitor on-time will continue until flame fails to be achieved (resulting in a retry).

In the event of a retry, the warm-up time will be increased by two seconds and locked in at that duration. Once the warm-up time is locked, it remains fixed until another call for heat results in a retry, in which case the warm-up time is again increased by two seconds and remains locked.

In the event of two successive retry attempts, the warm-up time will be unlocked and set to 21 seconds. If flame is then achieved, the warm-up time will begin adapting again with the next call for heat. If, however, this third attempt fails to achieve flame, the control will go into system lockout.

At the end of the ignitor warm-up time, both valves in the 36E manifold gas valve are opened. Flame must be detected within 4 seconds.

See installation instructions for more system sequence detail.

COOL MODE

In a typical system, a call for cool is initiated by closing the thermostat contacts. This energizes the 50A55 control and the compressor. The cool delay-to-fan-on period begins. After the delay period ends, the optional electronic air cleaner is energized, and the circulator fan is energized at cool speed. After the thermostat is satisfied, the compressor is de-energized and the cool mode delay-to-fan-off period begins. After the delay-to-fan-off period ends, the circulator fan and electronic air cleaner (optional) are de-energized.

MANUAL FAN ON MODE

If the thermostat fan switch is moved to the ON position, the circulator fan (cool speed) and optional electronic air cleaner are energized. When the fan switch is returned to the AUTO position, the circulator fan and electronic air cleaner (optional) are de-energized.

SYSTEM LOCKOUT FEATURES

When system lockout occurs, the gas valve is de-energized, the circulator blower is energized at heat speed, and, if flame is sensed, the inducer blower is energized. The diagnostic indicator light will flash or glow continuously to indicate system status. **(System lockout will never override the precautionary features.)**

To reset the control after system lockout, do one of the following:

1. Interrupt the call for heat or cool at the thermostat for at least one second but less than 20 seconds (if flame is sensed with the gas valve de-energized, interrupting the call for heat at the thermostat will **not** reset the control).
2. Interrupt the 24 VAC power at the control for at least one second. You may also need to reset the flame rollout sensor switch.
3. After one hour in lockout, the control will automatically reset itself.

DIAGNOSTIC FEATURES

The 50A55-843 control continuously monitors its 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.

TYPICAL SYSTEM WIRING TABLE

50A55 TERMINAL	TERMINAL TYPE	SYSTEM COMPONENT CONNECTION
W G R Y	Terminal block with captive screws	low voltage thermostat W terminal (or equivalent)
		low voltage thermostat G terminal (or equivalent)
		low voltage thermostat R terminal (or equivalent)
		low voltage thermostat Y terminal (or equivalent)
		(2nd wire from Y terminal goes to 24 VAC HOT side of compressor contactor coil)
C TWIN*		24 VAC COMMON side of compressor contactor coil one wire twinning terminal
MV (2 terminals) TR TH RO1 RO2 FP PS HLI HLO GND (unused terminal)	12-pin connector & harness	gas valve (both gas solenoids are connected in parallel)
		24 VAC transformer (low voltage COMMON side)
		24 VAC transformer (low voltage HIGH side)
		rollout switch OUTPUT
		rollout switch INPUT
		flame sensor probe*
		pressure switch INPUT
		high limit INPUT
		high limit OUTPUT
		MUST BE RELIABLY GROUNDED TO CHASSIS
IND IGN IND N IGN N	4-pin connector & harness	inducer HOT side
		ignitor HOT side
		inducer NEUTRAL side
		ignitor NEUTRAL side
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

* The twinning feature is available only on models with six screw terminals; one of these terminals will be designated "TWIN". All 50A55-843 controls used in twinning applications must have the "TWIN" terminal.

† Maximum recommended flame probe wire length is 36 inches.

The 50A55 has only one serviceable part—an automotive type fuse, which protects the low voltage transformer from damage if its output is short-circuited. If the fuse has opened up, remove whatever caused the short circuit and replace the fuse with only a 3 Amp automotive type fuse. If the fuse is not the cause of the control's problem, replace the entire 50A55 control. There are no other user serviceable parts. Additional jumper wires are included in this package and should be used if the original wiring does not reach the control after mounting. Refer to the furnace wiring diagram for proper connection of the wires.

An additional wiring harness (WR 115-0223) is included in this package. If the control being replaced has a 2-pin (inducer / ignitor) connector, this wiring harness will adapt the furnace wiring to the 4-pin connector of the replacement control.

Trane application - Jumper wire 151-2906 (provided with control) must be installed on the furnace from R01 to R02 of the 12-pin connector.