

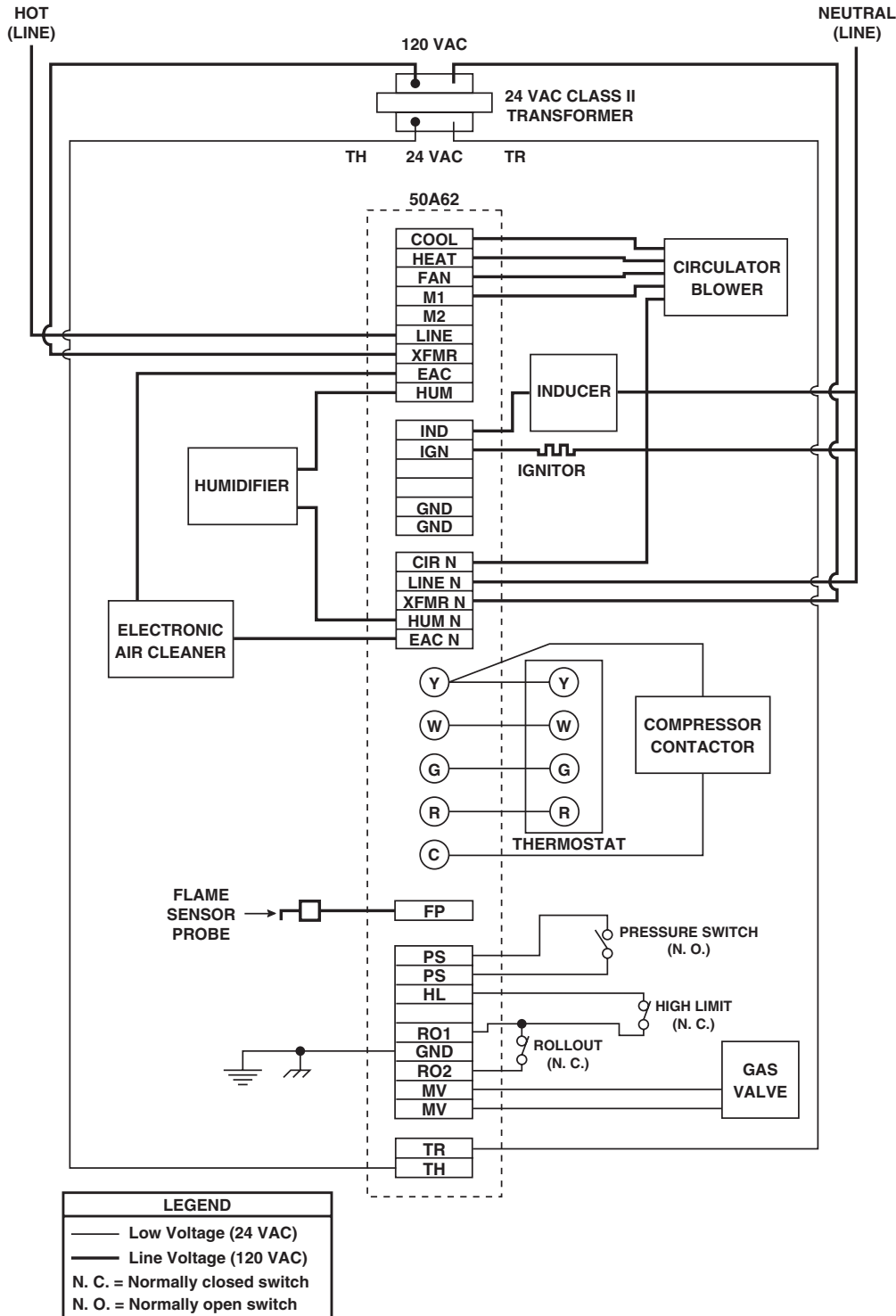
The 50A62-820 is an automatic gas interrupted ignition control that employs a microprocessor to continually monitor, analyze, and control the proper operation of the gas burner, inducer, and fan.

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.

Flame Current Requirements:

- Minimum current to insure flame detection.....1 μ DC^①
 - Maximum current for non-detection.....0.1 μ DC^①
 - Maximum allowable leakage resistance 100 M ohms
 - Flame establishing time.....0.8 seconds maximum
 - Flame failure response time2.0 seconds maximum
- ① Measured with a DC microammeter in the flame probe lead

50A62-820
TYPICAL SYSTEM WIRING DIAGRAM



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

TECHNICAL HELP

TYPICAL SYSTEM WIRING TABLE

50A62-820 TERMINAL	TERMINAL TYPE	SYSTEM COMPONENT CONNECTION
W	captive screw	low voltage thermostat W terminal (or equivalent)
G	captive screw	low voltage thermostat G terminal (or equivalent)
R	captive screw	low voltage thermostat R terminal (or equivalent)
Y	captive screw	low voltage thermostat Y terminal (or equivalent)
		2nd wire from Y terminal goes to 24 VAC HOT side of compressor contactor coil
C	captive screw	24 VAC COMMON side of compressor contactor coil
MV (2 terminals) RO1 RO2 PS PS GND HL (unused terminal)	9-pin connector & harness	gas valve (both gas solenoids are connected in parallel)
		rollout switch OUTPUT
		rollout switch INPUT
		pressure switch INPUT
		pressure switch OUTPUT
		MUST BE RELIABLY GROUNDED TO CHASSIS
		high limit switch input
IND IGN GND GND (unused 2 terminals)	6-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
M1	spade terminal	unused circulator blower terminal
M2	spade terminal	unused circulator blower terminal
FAN	spade terminal	circulator blower FAN SPEED terminal
LINE	spade terminal	input voltage (120 VAC) HOT side
XFMR	spade terminal	24 VAC transformer line voltage 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
HUM	spade terminal	humidifier HOT side
EAC (optional)	spade terminal	electronic air cleaner HOT side
HUM N	spade terminal	humidifier NEUTRAL side
EAC N (optional)	spade terminal	electronic air cleaner NEUTRAL side
TR	spade terminal	24 VAC transformer (low voltage COMMON side)
TH	spade terminal	24 VAC transformer (low voltage HIGH side)
FP	spade terminal	flame sensor port*

* maximum recommended flame probe wire length is 36 inches.

OPTION SWITCHES

The option switches on the 50A62-820 control are used to determine the length of the heat delay-to-fan-off period. The following table shows the time periods that will result from the various switch positions.

OPTION SWITCH POSITIONS

HEAT delay-to-fan-off:	Set switch	
	#1	#2
180 sec.	On	On
120 sec.	On	Off
90 sec.	Off	On
60 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 50A62 control's heating sequence. The inducer blower and humidifier are energized (if there is an optional electronic air cleaner on the system, the humidifier is **not** energized until the electronic air cleaner is energized). The 768A Silicon Nitride ignitor is powered within one second.

This controller has an adaptive algorithm that reduces the ignitor temperature to slightly greater than the minimum temperature required to ignite gas in each particular application. The control measures the line voltage and determines an initial ignitor temperature setting based on the measurement. After each successful ignition, the control lowers the ignitor temperature slightly for the next ignition attempt. The control continues to lower the ignitor temperature until ignition does not occur, and the control goes into retry mode. For the second attempt to ignite gas within the same call for heat, the control increases the ignitor temperature to the value it was on the third previous successful ignition. After ignition is successful, the control sets the ignition temperature at this value for the next 255 calls for heat, after which the control repeats the adaptive algorithm. The control is constantly making adjustments to the ignitor temperature to compensate for changes in the line voltage.

The 80 VAC Silicon Nitride ignitor manufactured by White-Rodgers must be used. These ignitors are specially designed to operate with the 50A62's adaptive ignition routine to ensure the most efficient ignitor temperature.

COOL MODE

In a typical system, a call for cool is initiated by closing the thermostat contacts. This starts the 50A62 control's cooling sequence. The compressor is energized and the cool mode delay-to-fan-on period begins. After the delay-to-fan-on period ends, the circulator fan is energized at cool speed. The electronic air cleaner (optional) is also energized. 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 (fan 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 for 5 seconds. The diagnostic indicator light will flash or glow continuously to indicate system status. **(System lockout will never override the precautionary features described above.)**

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

1. Interrupt the call for heat at the thermostat for at least one second (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 50A62-820 control continuously monitors its own operation and the operation of the system. If a failure occurs, the DIAG 1 and DIAG 2 LEDs will indicate a failure code as shown below.

SAFETY CIRCUIT	DIAG 1	DIAG 2
Limit Control	Slow Flash	On
Pressure Switch	Off	Slow Flash
Watch Guard - Burners Failed to Ignite	Alternate Slow Flash	Alternate Slow Flash
Flame Sensed Without Valve Energized	Slow Flash	Off
Roll Out Open or 9-Pin Connector Disconnected	On	Slow Flash
Bad Board	On	On
Power On	Simultaneous Slow Flash	Simultaneous Slow Flash
Low Flame	Slow Flash	Slow Flash
Reverse Polarity	Fast Flash	Slow Flash
Low Voltage or Ignitor Disconnected	Alternate Fast Flash	Alternate Fast Flash
Heat Demand	Simultaneous Fast Flash	Simultaneous Fast Flash