

ST9162 Two-Stage Electronic Fan Timers

INSTALLATION INSTRUCTIONS

APPLICATION

The ST9162 Two-Stage Electronic Fan Timers integrate control of all circulating fan operations in a two-stage gas warm air appliance. These controls are the central wiring point for most of the electrical components of the appliance. The ST9162 monitors the thermostat for heat, cool, and fan demands and controls a multi-speed circulating fan as required. Communication with the SmartValve™ System Control initiates appliance lightoff.

The ST9162 connects to either a single-stage or two-stage thermostat. For both thermostats, it provides sequencing of two heat stages in a two-stage gas warm air appliance.

The ST9162A features a field-adjustable heat fan-on delay and a field-adjustable heat fan off delay. Cooling fan-on and -off delay is fixed. Specific timings vary. See appliance label or instructions for timings that are available for a specific appliance.

A single-stage thermostat mode with a fixed, 12-minute, second stage delay is field-selectable.

Electronic air cleaner (EAC) and humidifier (HUM) convenience terminal connections can be provided as an option. Continuous low speed indoor air circulation is also available as an option. Thermostat connections are screw terminals.

SPECIFICATIONS

Electrical Ratings:

Power Voltage Requirements: 18 to 30 Vac, 50/60 Hz.

Contact Ratings:

Circulating Fan:

15A full load, 30A locked rotor at 120 Vac.

7.5A full load, 15A locked rotor at 240 Vac.

Max Humidifier: 1A at 120 Vac. (Reduces heat speed circulating fan rating.)

Max Electronic Air Cleaner: 1A at 120 Vac. (Reduces heat and cool speed circulating fan rating.)

Thermostat Anticipator Load (Nominal for Each Stage): Heat, 0.1A.

Fuse (Optional): 5A, automotive type.

Environmental Ratings:

Temperature: -40° to +150°F (-40° to +66°C).

Humidity: 5 to 90% rh at 95°F noncondensing.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.



CAUTION

Electrical Shock or Equipment Damage Hazard.

Can shock individuals or short equipment circuitry.

Disconnect power supply before installation.

Location and Mounting

The ST9162 is mounted using four No. 6 screws (obtained locally). Snap-in plastic standoffs also can be used for mounting. The typical mounting location is the appliance compartment. The ST9162 can be mounted in any orientation.

Wiring

All wiring must comply with local codes and ordinances. Disconnect power before making wiring connections. Route wiring to minimize the strain on the ST9162 connections. Connect the ST9162 to the SmartValve™ System Control. Refer to Fig. 1 for standard wiring connections.



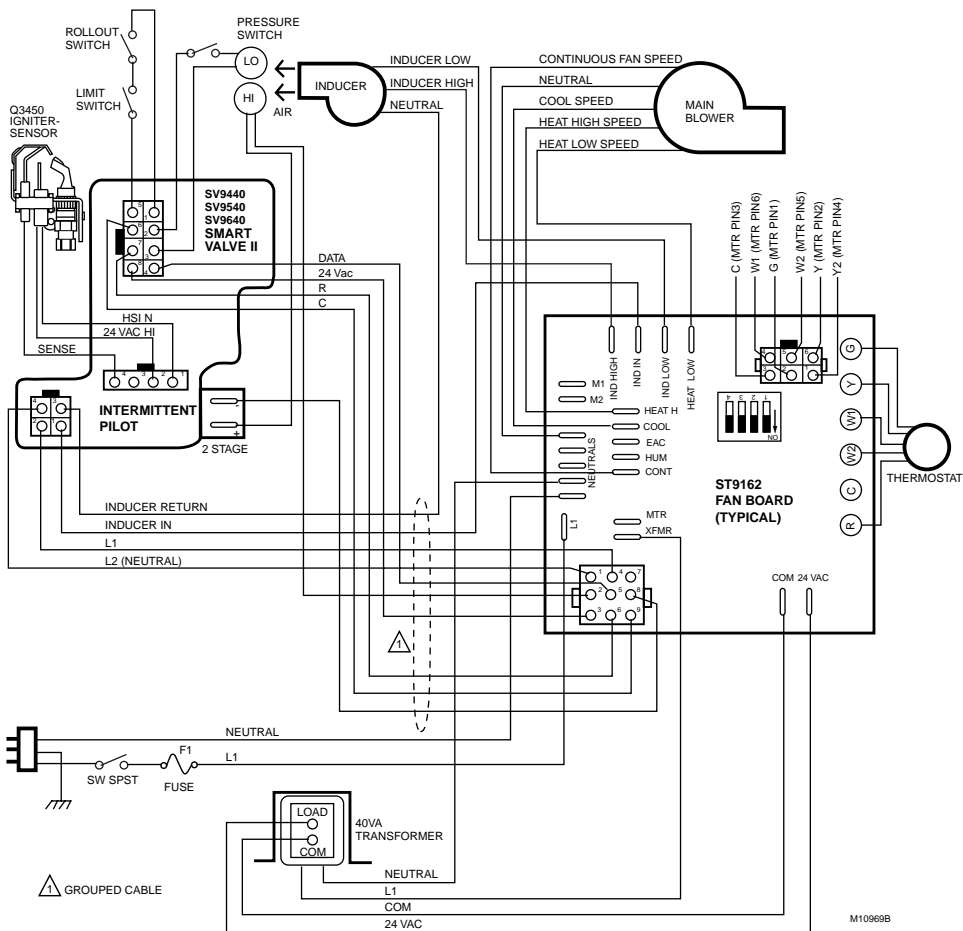


Fig. 1. Typical ST9162 wiring connections with SV9440, SV9540 or SV9640 SmartValve™ System Control.

Setting and Adjusting Heat Fan DIP Switches

Set the heat fan off delay DIP switches as shown in Fig. 2, and set the heat fan on delay DIP switches as shown in Fig. 3. Set the two-stage thermostat mode as shown in Fig. 4.

The on-delay time starts at the end of the trial for ignition period in direct ignition applications, or after the flame stabilization period in intermittent pilot applications. The off-delay time starts when the main burner shuts off at the end of a thermostat call for heat.

NOTE: Times available for selection vary by model. See appliance label or instructions for the appropriate settings for a particular application. Timings are for 60 Hz applications; however, in 50 Hz applications, timings increase by 20 percent.

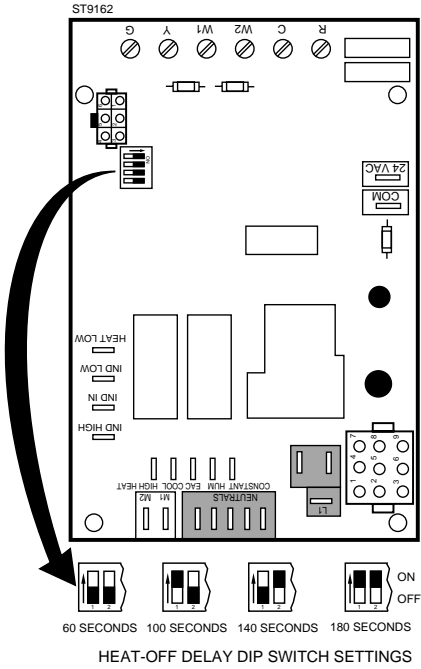


Fig. 2. Setting heat fan off delay DIP switches.

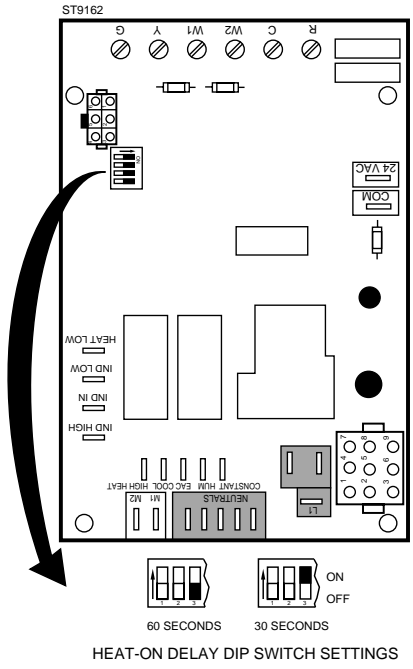


Fig. 3. Setting heat fan on delay DIP switches.

CHECKOUT

To verify system operation, operate the system through at least one complete heating cycle and cooling cycle. Troubleshoot by checking for appropriate voltages at the ST9162 terminals that control the circulating fan.

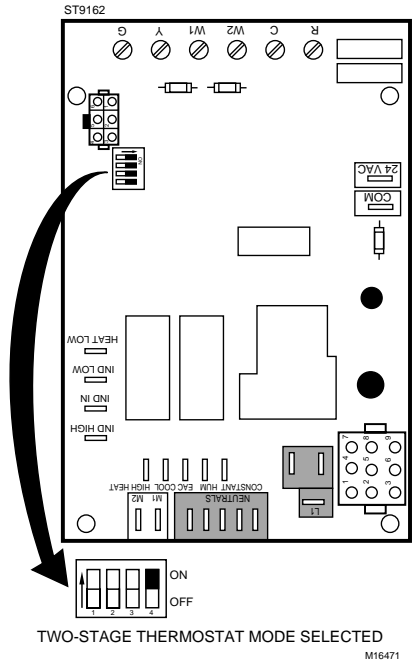


Fig. 4. Selecting two-stage thermostat mode.

Table 2. ST9162 Operating Sequence.

Action	System Response
Thermostat calls for heat.	<ul style="list-style-type: none"> Request for heat is sent to the SmartValve™ System Control. Main burner lights. Request for heat speed fan is received from SmartValve System Control. Heat speed indoor blower motor and humidifier are energized (after heat fan on delay). If this is a call for low heat (a W1 call for heat), the blower motor and humidifier are energized on low; if this is a call for high heat (a W2 call for heat), the blower motor and humidifier are energized on high. If this is a call for heat (a W1 call) with single-stage thermostat mode selected, the indoor blower motor is energized on low, but switches to high after 12 minutes of a continuous W1 call for heat.
Thermostat ends call for heat.	<ul style="list-style-type: none"> Request for heat to the SmartValve System Control stops. Indoor blower motor is de-energized (after heat fan off delay).
Thermostat calls for cool.	Indoor blower motor is energized at cool speed (after cool fan on delay).
Thermostat ends call for cool.	Indoor blower motor is de-energized (after cool fan-off delay).
Thermostat calls for manual fan.	Indoor blower motor is immediately energized at heat speed.
Thermostat ends call for manual fan	Indoor blower motor is immediately de-energized.
Thermostat calls for heat with manual fan call already present.	Normal heating cycle starts. Indoor blower motor turns off for heat fan-on delay, then energizes at heat speed.
Thermostat ends call for heat with manual fan call remaining.	Normal heating cycle stops. Indoor blower motor (heat speed) remains energized as long as there is a request for manual fan.
Thermostat calls for cool with manual fan call already present.	Cooling contactor energized. Indoor blower motor switches to cool speed (after cool fan-on delay). ^a
Thermostat ends call for cool with manual fan call remaining.	Cooling contactor de-energized. Indoor blower motor switches to heat speed (after cool fan-off delay). ^a
Electronic air cleaner is connected. (Optional connection to 120 Vac electronic air cleaner.)	Electronic air cleaner is energized when the heat or cool speed of the circulating fan is energized.
Humidity control is connected. (Optional connection to 120 Vac humidifier.)	Humidifier is energized when the indoor blower motor is energized at heat speed.

^a Indoor blower motor power cycles off, then back on, during the transition between the two speeds. This is normal operation for this control.

TROUBLESHOOTING

Disconnect the system thermostat before troubleshooting an appliance that includes the SmartValve™ System Control/ST9162 Two-Stage Electronic Fan Timer. This allows accurate analysis of the appliance control string to detect any problems. Once the control is working properly, the thermostat interface can be analyzed for any impact on system performance.

**ST9162 FAMILY
TROUBLESHOOTING**

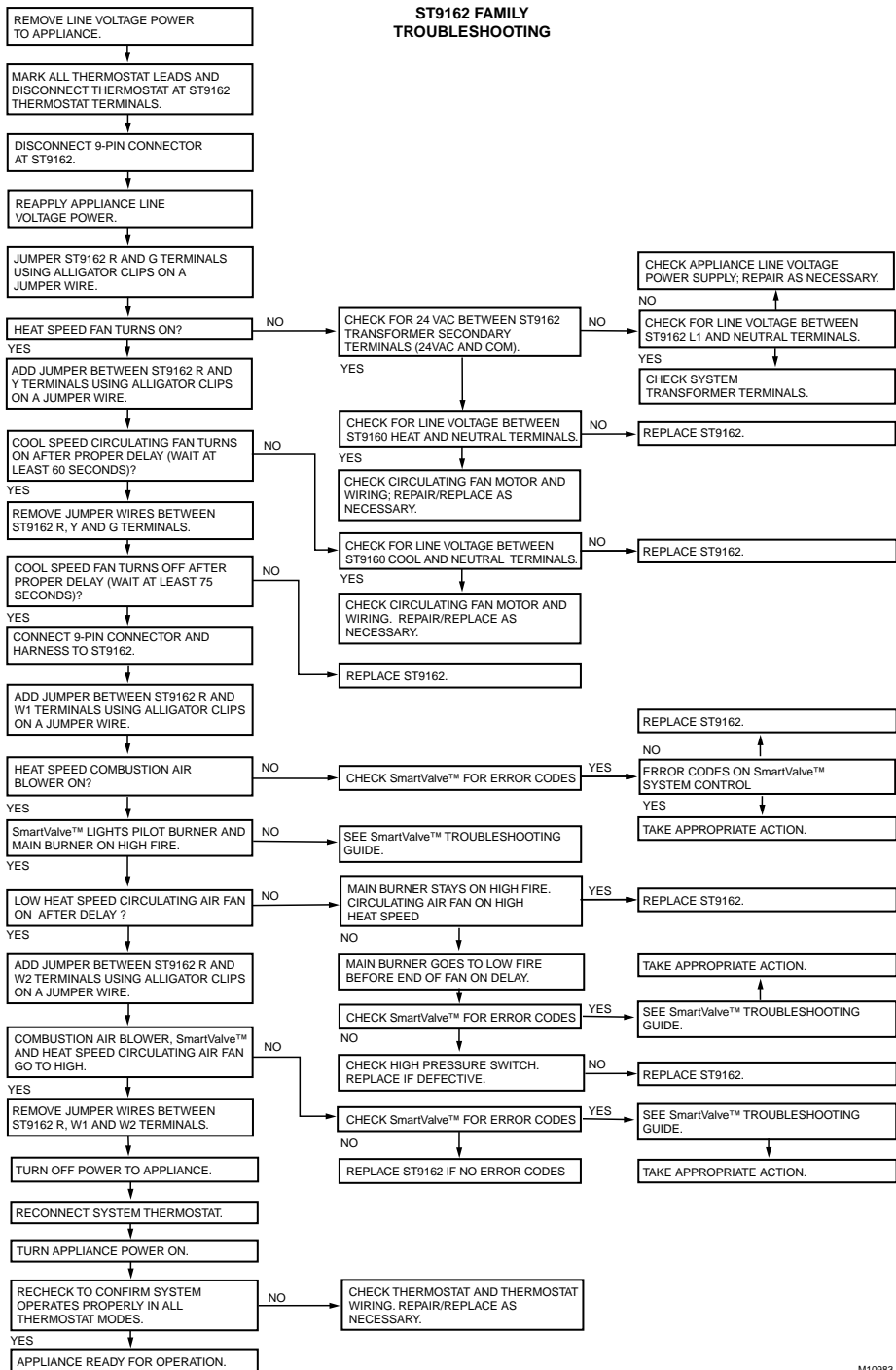


Fig. 5. S9162 Family Troubleshooting..

Honeywell

Home and Building Control
Honeywell Inc.
Honeywell Plaza
P.O. Box 524
Minneapolis, MN 55408-0524

Home and Building Control
Honeywell Limited-Honeywell Limitée
155 Gordon Baker Road
North York, Ontario
M2H 3N7

