



# ICM293 Intermittent Pilot Gas Ignition Control Module

## REPLACES

**Lennox:** 30W33 ignition control **Robertshaw:** 735L (18G91) or 745 (95H04) ignition controls **Johnson Controls:** G776 (63K2401, 41K8701, 69J3601) ignition controls

## FEATURES

- Intermittent Pilot Gas Ignition Control Module
- For use with intermittent pilot boilers, furnaces and other heating appliances
- Microprocessor-based
- Monitors timing, trial for ignition, flame sensing and lockout
- Remote flame sensing
- 100% lockout safety feature
- Compatible with LP or Natural Gas
- Status LED for fault codes to aid in troubleshooting

## SPECIFICATIONS

- Control Voltage:** Line 24 VAC (18-30 VAC) 50/60 Hz  
**Anticipator Setting:** 0.2A plus valve load @ 24 VAC  
**Prepurge:** 15 seconds  
**Trial for Ignition:** 85 seconds  
**Lockout:** 60 minutes  
**Flame Failure Response Time:** 0.5 seconds  
**Status LED:** See product label for error codes  
**Operating Temperature:**
- Minimum ambient temperature rating is -40°F (-40°C)
  - Maximum ambient rating when used with 2.0A main valve is 165°F (74°C)
- Relative Humidity:** 0% to 95% non-condensing

## SAFETY CONSIDERATIONS

Only trained personnel should install or service heating equipment. When working with heating equipment, be sure to read and understand all precautions in the documentation, on labels, and on tags that accompany the equipment. Failure to follow all safety guidelines may result in damage to equipment, severe personal injury or death.

## INTRODUCTION

The ICM293 Intermittent Pilot Gas Ignition Control Module provides easy field replacement of **Lennox:** 30W33 ignition control, **Robertshaw:** 735L (18G91) or 745 (95H04) ignition controls, **Johnson Controls:** G776 (63K2401, 41K8701, 69J3601) ignition controls. The ICM293 replaces existing flame rectification type, intermittent pilot ignition modules with the following characteristics:

- Remote flame sensing
- Non-100 percent shutoff, 100 percent shutoff/lockout, or 100 percent shutoff/ continuous retry
- Natural or LP gas
- Shutoff/lockout time: 60 minutes
- Prepurge 15 seconds

## REMOVE EXISTING CONTROL

**CAUTION!** To service control, and prior to disconnection, label all wires. Failure to do so may result in wiring errors that can cause dangerous operation.

1. Turn thermostat to OFF position or set it to the lowest possible setting.
2. Turn OFF electrical supply to furnace/appliance.
3. Turn OFF gas supply to furnace/appliance.

**CAUTION!** Failure to turn off gas and electric supplies can result in explosion, fire, death, or personal injury.

4. Label each wire with the correct terminal designation.
5. Disconnect the power supply and the thermostat lead wires from the existing ignition control.
6. Disconnect the sensing probe lead, the high voltage cable, the pilot valve and main valve leads, and any ground leads from the existing ignition control.
7. Remove screws and any other fasteners, and the old ignition board.

## INSTALL NEW CONTROL

1. Install the mounting plate
2. Mount the new control with metal screws or bolts through the mounting holes of the enclosure.
3. Wire per wiring diagrams on reverse side.
4. Verify the sequence of operation.

**NOTE:** Do not connect the thermostat wires to the control board until wiring is verified.

### Sequence of Operation:

The ignition control module's operation is divided into two phases: 1) Trial for pilot ignition and 2) Main burner operation

#### Trial for Pilot Ignition

On a "Call for Heat", the ignition control module energizes the spark source and the pilot valve relay simultaneously. The pilot valve opens, allowing gas to flow to the pilot burner for the ignition trial time. The spark lights the pilot flame when pilot gas is present. A flame rectification circuit confirms the presence of the pilot flame, shuts off the spark source, and energizes the main valve relay.

#### Main Burner Operation

When the main valve opens, gas flows to the main burner where it is lit by the pilot flame. There is a short flame stabilization period as the main valve opens to allow the pilot flame to stabilize as the main gas lights. The system is now in the run mode with the presence of the pilot flame continuously monitored by the flame rectification circuit. If the pilot flame goes out, the ignition control module senses loss of pilot flame and shuts off both the pilot valve relay and the main valve relay. Flow of gas to pilot and main burners stops as the valves close (100% shutoff).

#### Failed Trial for Pilot Ignition

The ICM293 control module provides multiple trials for ignition (TFI). If the pilot is not lit or sensed before the end of the trial for ignition time, the ignition control shuts off the spark and pilot gas (100% shutoff). There is a 60 minute delay before another TFI is initiated. The pattern of TFI followed by a 60 minute delay continues until the pilot lights and is proved or the "Call for Heat" ends. The 60 minute delay time can be bypassed by cycling the system thermostat or removing and restoring system power.

## LED FAULT CODES

# of Flashes	Represent
Constant ON	Normal operation
1 seconds on/5 seconds off	In retry period
Off	No power or detected fault

## TROUBLESHOOTING

Symptom	Remedy
<b>Flame not established</b>	Check gas supply, pilot burner, spark and flame sense wiring, flame rod contaminated or not enveloped with flame, burner ground connection.
<b>Flame out</b>	If system fails to light on next trial for ignition, check gas supply, pilot burner, flame sense wiring, contamination of flame rod, burner ground connection.
<b>Flame out of sequence</b>	Check for pilot flame. Replace gas valve if pilot flame present. If no pilot flame, cycle "Call for Heat." If error repeats, replace control.

## WIRING DIAGRAMS

Figure 1 – Typical wiring diagram for G20/G20R units with existing Robertshaw control

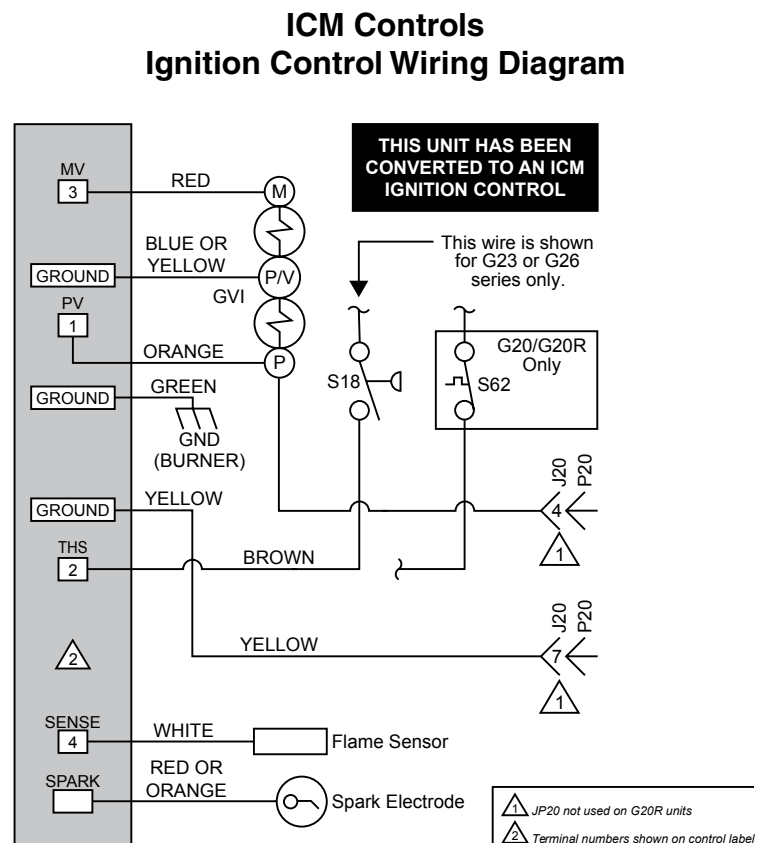
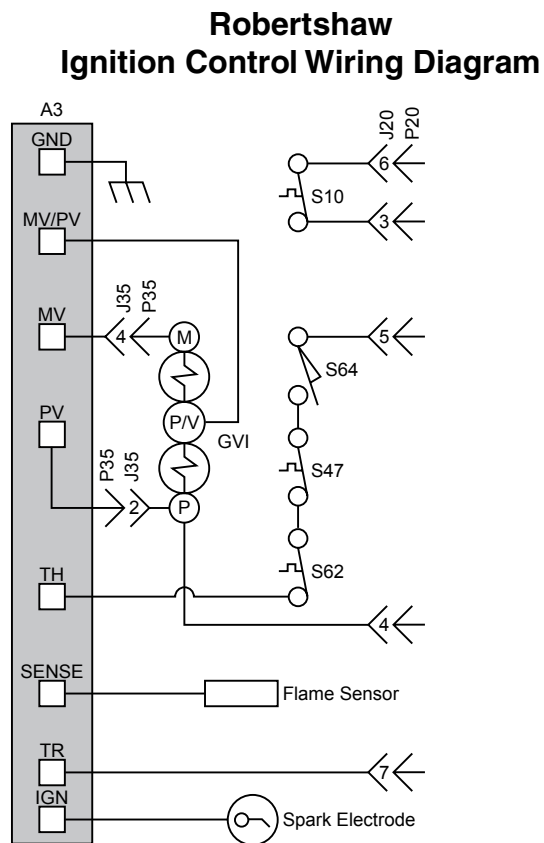


Figure 2 – Typical wiring diagram for G20/G20R/G23 and G26 units with existing Johnson control

