

ICM Controls ICM2901

ICM Controls ICM2901 Intermittent Pilot Gas Ignition Control (24V) User Manual

1. INTRODUCTION

The ICM Controls ICM2901 is a 24-volt intermittent pilot gas ignition control module designed for use in various heating applications. This control module provides timed ignition, trial for ignition, and flame sensing to ensure safe and efficient operation of gas-fired appliances. It serves as a direct replacement for several popular models, including York 025-27762-700 and JCI G770RJA-1 series controls.

This manual provides essential information for the safe and correct installation, operation, and maintenance of the ICM2901 control. Please read all instructions carefully before proceeding.

2. SAFETY INFORMATION

WARNING: Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury, or death. Read these instructions thoroughly before installing or servicing this equipment.

- Installation and service must be performed by a qualified installer, service agency, or gas supplier.
- Disconnect all electrical power to the appliance before installing or servicing this control.
- Turn off the gas supply to the appliance before installing or servicing this control.
- Verify proper grounding of the appliance and control.
- Check for gas leaks after installation and whenever gas piping is disturbed.
- Do not use this control with line voltage systems. It is designed for 24V AC applications only.
- Ensure all wiring connections are secure and comply with local and national electrical codes.

3. INSTALLATION

The ICM2901 control module should be installed in the same location as the original control it is replacing. Ensure the mounting surface is stable and free from excessive vibration or moisture.

1. **Power and Gas Disconnection:** Before beginning, ensure all electrical power and gas supply to the appliance are completely shut off.
2. **Remove Old Control:** Carefully disconnect all wires from the existing ignition control, noting their positions for reference. Remove the old control from its mounting.

3. **Mount New Control:** Mount the ICM2901 control module securely using the existing mounting holes or suitable fasteners. Ensure it is oriented correctly as per the original control.
4. **Wiring:** Refer to the wiring section for detailed instructions on connecting the ICM2901.
5. **Gas Leak Check:** After installation and before restoring power, perform a thorough gas leak check.

4. WIRING

All wiring must conform to local and national electrical codes. Use appropriate wire gauges for all connections. The ICM2901 typically features clearly labeled terminals for ease of connection.

- **24V AC Power:** Connect the 24V AC transformer output to the designated power terminals (e.g., R and C or 24V and GND).
- **Thermostat/Call for Heat:** Connect the thermostat's call for heat (W terminal) to the appropriate input terminal on the control module.
- **Main Gas Valve:** Connect the main gas valve solenoid wires to the designated main valve terminals.
- **Pilot Gas Valve:** Connect the pilot gas valve solenoid wires to the designated pilot valve terminals.
- **Igniter:** Connect the igniter lead to the igniter terminal.
- **Flame Sensor:** Connect the flame sensor lead to the flame sensor terminal. Ensure the flame sensor is properly positioned in the pilot flame.
- **Ground:** Ensure a secure ground connection to the appliance chassis.

Note: Always refer to the specific wiring diagram provided with your appliance or the original control for exact terminal designations and connections.

5. SETUP AND INITIAL CHECKS

After completing the physical installation and wiring, perform the following checks before restoring full operation:

1. **Verify Connections:** Double-check all wiring connections for tightness and correctness according to the appliance's wiring diagram.
2. **Gas Supply:** Ensure the gas supply to the appliance is turned on.
3. **Restore Power:** Restore electrical power to the appliance.
4. **Initiate Call for Heat:** Set the thermostat to call for heat. Observe the ignition sequence.
5. **Observe Ignition Sequence:**
 - The igniter should energize, creating a spark.
 - The pilot gas valve should open, allowing gas to flow to the pilot.
 - The pilot flame should ignite.
 - The flame sensor should detect the pilot flame.
 - After a brief delay, the main gas valve should open, and the main burner should ignite.
6. **Flame Sense Check:** Once the main burner is lit, verify that the flame sensor is detecting the flame. If the flame is not detected, the control will shut down the gas supply.
7. **Cycle Test:** Allow the appliance to complete several heating cycles to confirm proper operation.

6. OPERATING PRINCIPLES

The ICM2901 operates as an intermittent pilot ignition control. Its primary function is to manage the ignition sequence and ensure safe combustion in gas-fired appliances. The typical operating sequence is as follows:

1. **Call for Heat:** Upon receiving a call for heat from the thermostat, the control initiates the ignition sequence.
2. **Pre-purge (if applicable):** Some systems may have a pre-purge cycle before ignition.
3. **Pilot Ignition:** The control energizes the igniter and opens the pilot gas valve. A spark ignites the pilot flame.
4. **Pilot Flame Proving:** The flame sensor detects the presence of the pilot flame. If the pilot flame is not established within a specified trial for ignition period, the control will shut down and attempt re-ignition or enter a lockout state.
5. **Main Burner Ignition:** Once the pilot flame is proven, the control opens the main gas valve, allowing the pilot flame to ignite the main burner.
6. **Main Flame Proving:** The flame sensor continues to monitor the main burner flame. If the flame is lost during operation, the control will shut down the gas supply.
7. **Post-purge (if applicable):** After the call for heat ends, some systems may have a post-purge cycle.

7. MAINTENANCE

The ICM2901 control module itself requires no routine maintenance. However, regular inspection and maintenance of the overall heating appliance are crucial for continued safe and efficient operation. This should be performed by a qualified service technician annually.

- **Flame Sensor Cleaning:** Periodically inspect and clean the flame sensor rod. Soot or carbon buildup can interfere with flame detection, leading to nuisance shutdowns. Use fine sandpaper or steel wool to gently clean the rod.
- **Wiring Inspection:** Check all wiring connections for signs of corrosion, fraying, or looseness.
- **Pilot Assembly Inspection:** Ensure the pilot burner and igniter are clean and free from obstructions.

8. TROUBLESHOOTING

If the appliance fails to operate correctly, consult this troubleshooting guide. Always disconnect power and gas before performing any checks or repairs.

Problem	Possible Cause	Solution
No ignition, no spark.	No 24V power to control; faulty igniter; open limit switch.	Check power supply; test igniter; check limit switches for continuity.
Spark present, but pilot does not light.	No gas to pilot; clogged pilot orifice; faulty pilot gas valve.	Verify gas supply; clean pilot orifice; test pilot gas valve.
Pilot lights, but main burner does not.	Dirty or faulty flame sensor; faulty main gas valve; insufficient pilot flame.	Clean flame sensor; test main gas valve; adjust pilot flame if possible (consult appliance manual).

Problem	Possible Cause	Solution
Burner lights, then shuts off prematurely.	Intermittent flame sensor signal; restricted flue; faulty limit switch.	Clean flame sensor; check flue for blockages; test limit switches.
Control enters lockout.	Repeated ignition failures; safety device tripped.	Identify and correct the underlying ignition issue; reset control by cycling power.

If troubleshooting steps do not resolve the issue, contact a qualified service technician. Do not attempt to bypass safety devices.

9. SPECIFICATIONS

- **Model:** ICM2901
- **Input Voltage:** 24 VAC, 50/60 Hz
- **Ignition Type:** Intermittent Pilot
- **Trial for Ignition:** Typically 7 seconds (may vary by application)
- **Flame Sense:** Single rod flame sensor
- **Operating Temperature:** -40°F to 175°F (-40°C to 79°C)
- **Replacement For:** York 025-27762-700, JCI G770RJA-1 series controls, and others.

10. WARRANTY INFORMATION

ICM Controls products are manufactured under strict quality control standards. This product is covered by a limited manufacturer's warranty against defects in materials and workmanship for a specified period from the date of purchase. For detailed warranty terms and conditions, please refer to the official ICM Controls website or contact their customer support. Keep your proof of purchase for warranty claims.

11. TECHNICAL SUPPORT

For technical assistance, wiring diagrams specific to your application, or further information regarding the ICM2901 Intermittent Pilot Gas Ignition Control, please contact ICM Controls directly:

- **Website:** www.icmcontrols.com
- **Phone:** Refer to the website for current contact numbers.
- **Email:** Refer to the website for current contact email addresses.

When contacting support, please have your product model number (ICM2901) and a description of your issue readily available.