ICM Controls ICM291

ICM Controls ICM291 Furnace Control Board User Manual

Model: ICM291

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of the ICM Controls ICM291 Furnace Control Board. The ICM291 is designed as a direct replacement for Carrier LH33WP003/3A control boards, offering a microprocessor-based solution for furnace control.

It controls combustion, blower, and indoor fan motors, as well as the spark ignitor and gas valve. The board also monitors timing, trial for ignition, flame sensing, and lockout functions.

2. Safety Information

WARNING: Installation and servicing of heating, ventilation, and air conditioning (HVAC) equipment can be hazardous and requires specific training and knowledge. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury, or loss of life. Always consult a qualified installer, service agency, or the manufacturer for assistance.

- Always disconnect power to the furnace before installing, servicing, or removing the control board. Failure to do so can result in electrical shock, fire, or death.
- Ensure all wiring connections are secure and comply with local and national electrical codes.
- Do not bypass any safety devices.
- Wear appropriate personal protective equipment (PPE) during installation and servicing.

3. Product Overview

The ICM Controls ICM291 is a Direct Spark Ignition (DSI) control board designed for reliable furnace operation.

Its key features include:

- Low cost form, fit and functional replacement for Carrier: LH33WP003A
- Direct Spark Ignition (DSI) control board
- Microprocessor-based operation
- Controls combustion, blower and indoor fan motors; spark ignitor; and the gas valve
- Monitors timing, trial for ignition, flame sensing and lockout

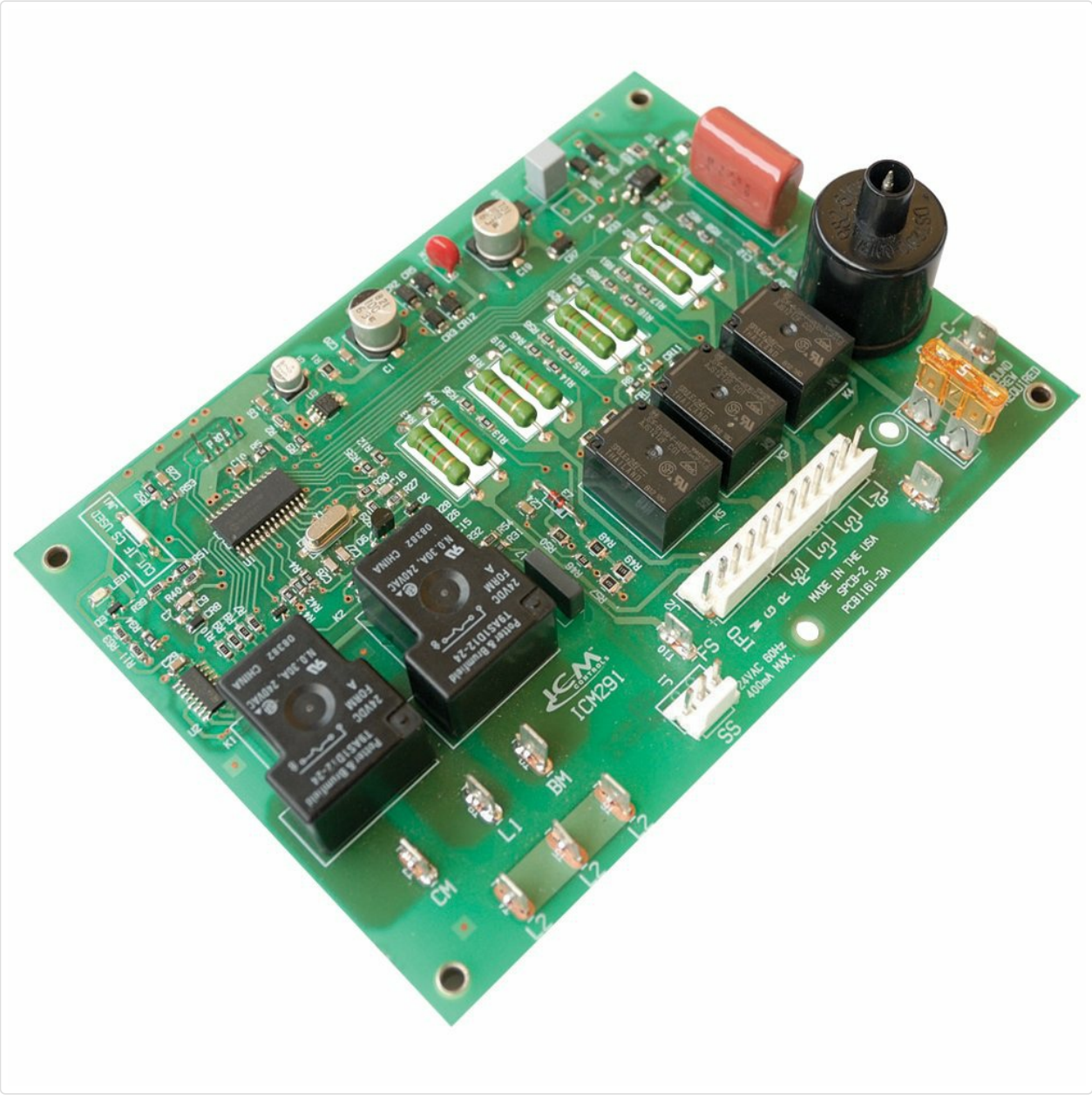

Figure 3.1: ICM Controls ICM291 Furnace Control Board. A green circuit board with various electronic components including relays, resistors, capacitors, and a microprocessor. The board is labeled 'ICM291' and 'MADE IN THE USA'.

4. Setup and Installation

Installation of the ICM291 control board should only be performed by a qualified HVAC technician. Ensure the furnace power supply is disconnected before beginning installation.

1. Disconnect all power to the furnace unit at the main breaker.
2. Carefully remove the access panel to expose the existing control board.
3. Document all wiring connections to the old board (e.g., take photos).

4. Disconnect all wires and remove the old control board. Note that the original board may be attached with a ground screw and mounting pegs that slide sideways out of slots.
5. Install the new ICM291 board, ensuring it is securely mounted in the same location as the original. The mounting pegs and screw holes are designed for direct fitment.
6. Reconnect all wires to the corresponding terminals on the new ICM291 board, following your documentation.
7. Replace the furnace access panel.
8. Restore power to the furnace unit at the main breaker.
9. Test the furnace operation to ensure proper functionality.

5. Operating Instructions

The ICM291 furnace control board operates automatically once installed and power is supplied to the furnace. It manages the sequence of operations for heating cycles, including:

- **Call for Heat:** Upon receiving a call for heat from the thermostat, the board initiates the heating sequence.
- **Inducer Motor Activation:** The inducer motor starts to create a draft.
- **Pressure Switch Check:** The board verifies the pressure switch closes, indicating proper draft.
- **Ignition Sequence:** The spark ignitor is activated, followed by the opening of the gas valve.
- **Flame Sensing:** The board monitors for flame presence. If no flame is detected within a specified trial for ignition period, the board will attempt re-ignition or enter a lockout state.
- **Blower Motor Activation:** Once the heat exchanger is sufficiently warm, the indoor blower motor is activated to distribute heated air.
- **Cycle Completion:** When the thermostat's call for heat is satisfied, the gas valve closes, and the blower motor continues to run for a set period to dissipate residual heat.

6. Maintenance

The ICM291 control board itself requires no routine maintenance. However, regular maintenance of the overall furnace system is crucial for its longevity and efficient operation. It is recommended to have your HVAC system inspected and serviced annually by a qualified technician. This includes:

- Checking and cleaning the flame sensor.
- Inspecting and cleaning the ignitor.
- Verifying proper operation of all safety switches.
- Checking electrical connections for tightness and corrosion.
- Replacing air filters regularly.

7. Troubleshooting

If your furnace is not operating correctly after installing the ICM291, consider the following common issues:

- **No Power to Furnace:** Check the main circuit breaker and any furnace-specific disconnect switches. Ensure the furnace door switch is engaged.
- **Furnace Not Igniting:** Verify the gas supply is on. Check for proper operation of the ignitor and flame sensor. Ensure all wiring connections to the board are secure. The board may enter a lockout state if ignition fails multiple times; cycle power to reset.
- **Blower Not Running:** Check thermostat settings. Ensure the blower motor is receiving power and is not

seized.

- **Error Codes:** Many furnaces have diagnostic LED lights on the control board that flash specific patterns to indicate error codes. Consult your furnace's specific manual for interpreting these codes.

If issues persist, it is strongly recommended to contact a qualified HVAC technician for diagnosis and repair.

8. Specifications

Specification	Value
Model Number	ICM291
Product Dimensions	6 x 6 x 6 inches
Item Weight	10 ounces
Manufacturer	ICM
Replacement For	Carrier LH33WP003/3A
Ignition Type	Direct Spark Ignition (DSI)

9. Warranty and Support

For specific warranty information regarding your ICM Controls ICM291 Furnace Control Board, please refer to the documentation provided at the time of purchase or contact ICM Controls directly. Warranty terms typically cover defects in materials and workmanship under normal use.

For technical support or assistance with troubleshooting that cannot be resolved using this manual, please contact your installer or a qualified HVAC service professional. You may also visit the official ICM Controls website for additional resources or contact information.