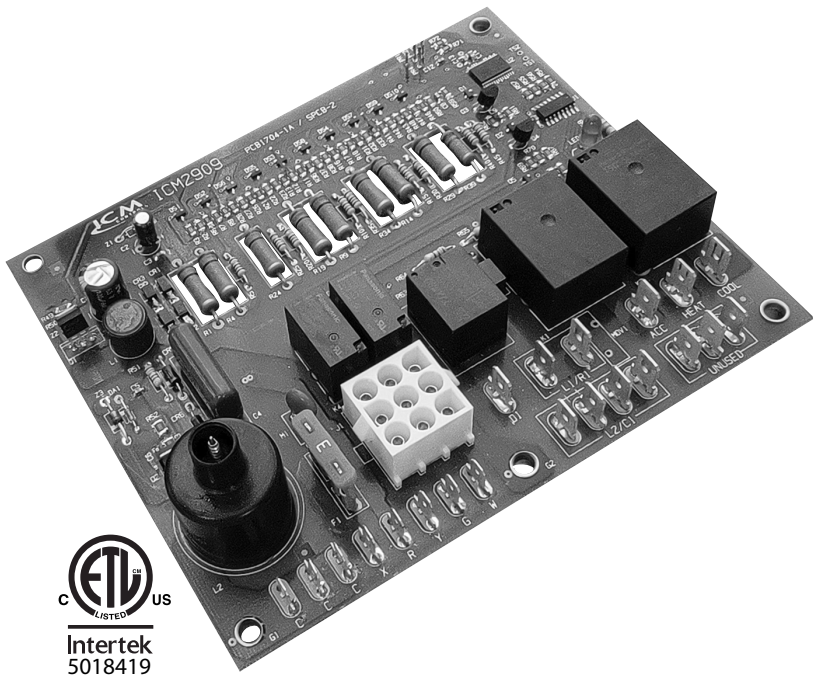
ICM2909
Direct Spark Ignition (DSI) control board



Intertek
5018419

Features

- ***Direct Spark Ignition (DSI) control board***
- ***Microprocessor-based***
- ***Monitors timing, trial for ignition, system switches, flame sensing and lockout.***
- ***100% lockout safety feature***
- ***Compatible with LP or Natural Gas***
- ***LED indication for status and fault codes to aid in troubleshooting***

Introduction

The **ICM2909** DSI control replaces the following Rheem models: 62-23599(-01,-02,-03,-04,-05). The **ICM2909** has incorporated LED diagnostics to assist in troubleshooting. Fault code information can be found in this application guide. Please keep this application guide with the furnace installation manual for future reference.

Replaces

- **Rheem:** 62-23599(-01,-02,-03,-04,-05)

Specifications

Inputs
- **Line voltage:** 240 VAC, 50/60 Hz
- **Control voltage:** 18-30 VAC, 50/60 Hz
- **System switches:** Vent pressure, limit and MRLC (Manual Reset Limit Control)

Outputs
- **Heat N.C.:** 16FLA/36 LRA @ 240 VAC
- **Cool N.O.:** 15FLA/30 LRA @ 240 VAC
- **Inducer:** 4FLA/4LRA @ 240 VAC
- **Gas valve:** 2.3 A PILOT DUTY @ 240 VAC

Environmental
- **Operating temperature:** -40˚F to 175˚F (-40˚C to 80˚C)
- **Storage temperature: -**40˚F to 185˚F (-40˚C to 85˚C)
- **Humidity:** 5% - 95% R.H. (non-condensing) at +55˚C
- **Dimensions:** 6.60” x 5.75” x 2.25”

> > > CAUTION < < <

ELECTRICAL SHOCK HAZARD! ***Before installing this unit, turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position. Follow all Local, State and National Electrical Codes when installing this device.***

CAUTION! ***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.***

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

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

4. Remove the furnace blower and control access doors.
5. Disconnect the thermostat wires and humidifier wires (if equipped with a humidifier).
6. Disconnect the line voltage, blower, electronic air cleaner wires (if equipped) and transformer wires.
7. Remove screws and any other fasteners and the old circuit board.
8. Examine the control and the control box for water stains.
9. Make repairs if any sources of water leakage are found. Be sure to check humidifiers, evaporator coils and vent systems in the area of the control.

Install New Control

1. Ground yourself. When handling the circuit board; hold it by the edges.
2. Fasten the circuit board with the retaining screws.
3. Connect all line voltage, low voltage and accessory wires.
4. Verify the sequence of operation.

Sequence of Operation

When a W call is received from the thermostat; the control shall perform a hardware safety check before progressing with the heat sequence. If no issues are detected during the hardware safety check; the Inducer Draft motor is energized. The Vent Pressure switch closes. Ignition sequence begins; gas valve and spark are engaged, providing the system safety switches (Limit and MRLC) are closed. The Blower motor will engage at the **HEAT** speed **30 seconds** after flame is established and sensed. Once the W call has been satisfied; the Inducer motor turns off after 5 seconds and the blower motor turns off after **90 seconds**.

A G call from the thermostat will engage the blower motor without delay at the **HEAT** speed. It disengages without delay when the G call is removed.

A Y call from the thermostat will engage the blower motor without delay at the **COOL** speed. It disengages **30 seconds** after the Y call is satisfied.

Flame Sense Troubleshooting Tips

Flame not established

1. If flame is not established during the **7 second** initial sequence then the control will start the next trial for ignition in **60 seconds**.
2. There will be 2 more attempts to ignite, **60 seconds** apart before the respective fault code is triggered and ignition trials are stopped.
3. The gas valve is energized only during the ignition sequence of **7 seconds**.
4. The blower motor is off until **30 seconds** after flame is established.

Flame out

1. Flame out is considered when flame is lost during the heating cycle.
2. When a signal is present on W and flame is not sensed; the gas valve will disengage until the next trial for ignition
3. The inducer motor will continue running during flame out scenario and the blower motor will turn off after the **90 second** post purge.

Flame out of sequence

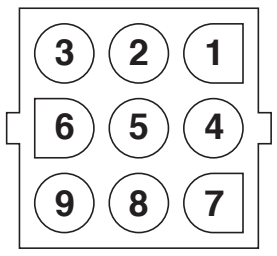
1. Flame out of sequence represents a scenario where flame is sensed while the W signal is not present.
2. Inducer and Blower motors will be engaged (if not already running) and will continue running for as long as the fault condition is present.
3. There is **60 minute** lockout before a W call can be executed or on power reset

FAULT CODES, STATUS LIGHTS AND TROUBLESHOOTING

Flashes	Fault Condition	Trouble Shooting
ON solid	Normal operation	Normal
OFF	No power or incorrect gas valve wiring	Check for 24VAC to the board,check door switch, check supply transformer primary and secondary voltage, make sure gas valve is wired correctly and grounded properly.
1	Flame loss or ignition failure lockout	Flame was lost or the number of retry’s or recycles has exceeded the limit for the control. Clean or replace the flame sensor, check the igniter for proper operation & input voltage, check the transformer’s common is grounded to earthground
2	Pressure switch stuck open or stuck closed	Check for obstructed pressure switch tubing or defective pressure switch. Check for oxidation on terminals, broken wires, or defective inducer motor. Check for proper voltage at the inducer motor input.
3	Limit switch open	Check for blocked airflow, blocked duct work and dirty filter. Check or replace high limit switch if defective.
4	Flame detected with gas valve closed	Flame was sensed when no flame is present. Check or replace flame sensor and check the grounds.
5	Manual Reset Limit Control is open	Check for plugged flue pipe, check for cracked heat exchanger, check for flame rollout.
6	Internal Error	Internal board failure, replace control board

ICM CONTROLS
www.icmcontrols.com
7313 William Barry Blvd.
North Syracuse, NY 13212
800.365.5525

Molex Plug Pin Out

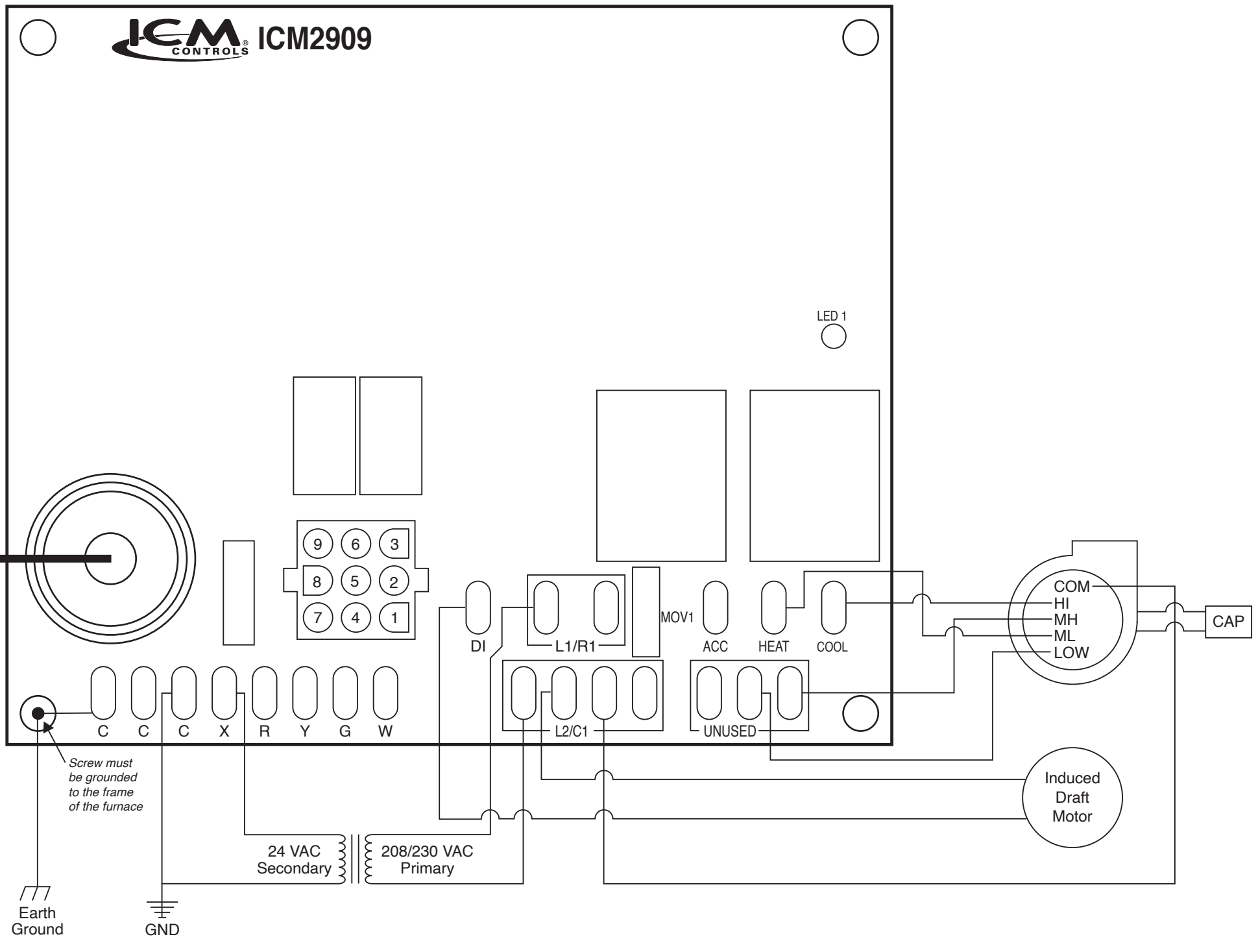


Pin 1 Limit switch input
Pin 2 24 VAC COM
Pin 3 Gas valve output
Pin 4 Limit switch output
Pin 5 Pressure switch input
Pin 6 Pressure switch output
Pin 7 MRLC (Manual Reset Limit Control) input
Pin 8 MRLC (Manual Reset Limit Control) output
Pin 9 Flame sense

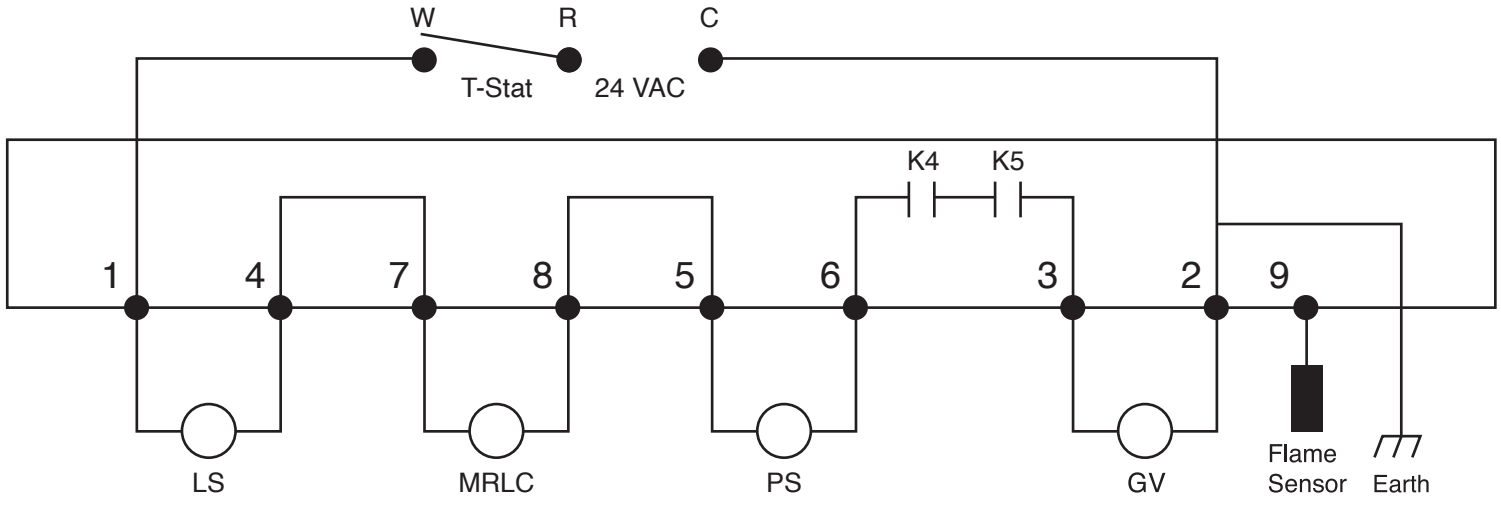
Fault Codes

Flashes	Fault Condition
ON	Normal operation
OFF	No power or incorrect gas valve wiring
1	Flame loss or ignition failure lockout
2	Pressure switch stuck open or stuck closed
3	Limit switch open
4	Flame detected with gas valve closed
5	MRLC (Manual Reset Limit Control) open
6	Internal Error

Wiring Diagram



Connection Diagram



LEGEND

ACC = Accessory
DI = Draft inducer
FS = Flame sensor
GND = Ground
GV = Gas valve
K4,K5 = Internal relays
LS = Limit switch
MRLS = Manual reset limit switch
PS = Vent pressure switch

ICM CONTROLS
www.icmcontrols.com
7313 William Barry Blvd.
North Syracuse, NY 13212
800.365.5525