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Emerson 50A65-5165

WHITE RODGERS 50A65-5165 Ignition Board Instruction Manual

Brand: Emerson

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1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the WHITE RODGERS 50A65-5165 Ignition Board. This integrated furnace control board is designed as an OEM replacement for various Trane models, ensuring compatibility and reliable performance. It is crucial to read and understand all instructions before proceeding with installation or troubleshooting to ensure safe and proper functioning of your HVAC system.

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.

- Always disconnect the main power supply to the furnace at the circuit breaker or fuse box. Failure to do so can result in electrical shock or severe injury.
- Ensure all wiring connections are secure and comply with local and national electrical codes.
- This product should only be installed by a qualified technician.
- Do not bypass any safety devices.
- Verify proper grounding of the furnace system.
- Keep children and pets away from the work area during installation and maintenance.

3. PRODUCT OVERVIEW

The WHITE RODGERS 50A65-5165 Ignition Board is an integrated furnace control module responsible for managing the ignition sequence, flame sensing, and various safety functions of your furnace. It is designed to match the mounting and

connection points of the original equipment, minimizing installation complexity.

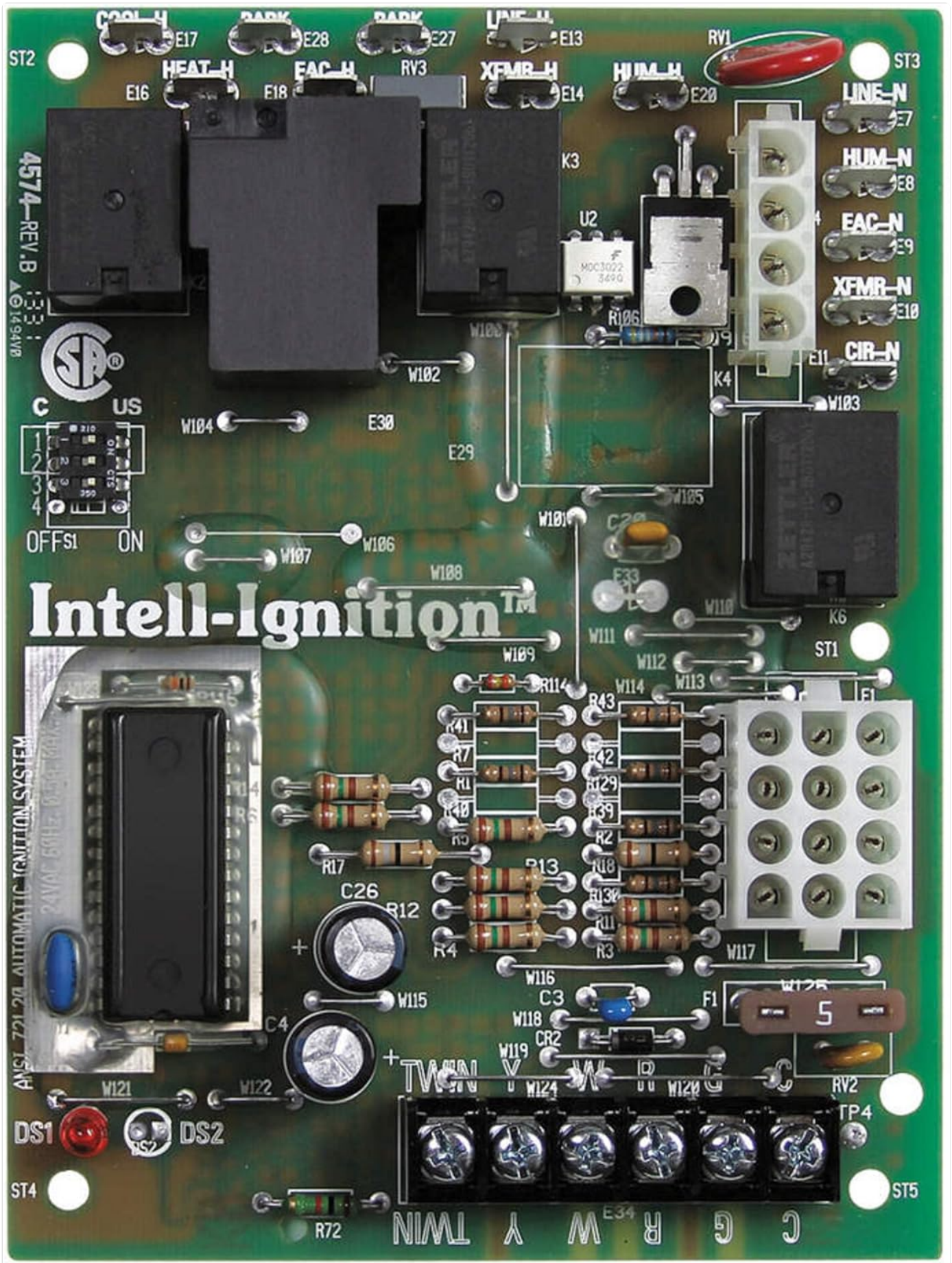


Figure 3.1: Overview of the WHITE RODGERS 50A65-5165 Ignition Board. This image displays the entire circuit board with various components, including relays, capacitors, resistors, and terminal blocks, essential for furnace control.

Key Components:

- **Relays (K3, K4, K6):** These black rectangular components control various furnace functions such as the blower motor, inducer motor, and gas valve.
- **Terminal Blocks (ST1, ST2, ST3, ST4, ST5):** These are connection points for wiring, including thermostat connections (R, G, W, Y), line voltage, and low voltage controls. ST5 is clearly labeled with R, G, W, Y, C terminals.
- **Dip Switches (OFFS1, ON):** Located near the "C US" label, these switches are used for configuring specific operational parameters of the board, such as fan delays or furnace type.
- **Capacitors (C3, C4, C26):** Cylindrical components that store electrical energy and filter voltage.
- **Resistors:** Numerous small, banded components (e.g., R17, R43) that limit current flow within the circuit.
- **Integrated Circuit (Intell-Ignition™):** The main control chip, labeled "Intell-Ignition™", which processes signals and controls the board's logic.
- **Fuse (F1):** A protective device, typically a small glass tube or ceramic block, designed to break the circuit if current exceeds a safe level. The image shows a "5" on it, likely indicating a 5 Amp fuse.
- **LED Indicators (DS1, DS2):** Diagnostic lights (red and green) that provide status and error codes.

4. SETUP & INSTALLATION

Before beginning installation, ensure you have read and understood the safety information. This procedure requires basic electrical knowledge and tools.

4.1. Preparation

1. **Disconnect Power:** Turn off the main power supply to the furnace at the circuit breaker or fuse box. Verify power is off using a voltage tester.
2. **Access Furnace Control Area:** Open the furnace access panel to expose the existing control board.
3. **Document Wiring:** Take clear photos of the existing wiring connections to the old board. Label each wire and its corresponding terminal on the old board. This is critical for correct re-connection.

4.2. Removal of Old Board

1. **Disconnect Wires:** Carefully disconnect all wires from the old control board, referring to your documented photos and labels.
2. **Remove Mounting Hardware:** Unclip or unscrew the old board from its mounting location within the furnace.
3. **Inspect Area:** Check for any signs of damage, corrosion, or debris in the mounting area.

4.3. Installation of New Board

1. **Mount New Board:** Secure the WHITE RODGERS 50A65-5165 Ignition Board in the same location as the old board, ensuring it is firmly seated.
2. **Connect Wires:** Reconnect all wires to the new board, matching them to the correct terminals based on your documentation. Ensure all connections are tight and secure. Pay close attention to the R, G, W, Y, C terminals on ST5.
3. **Configure Dip Switches:** If applicable, set the dip switches (OFFS1, ON) on the new board to match the settings of your original board or as required by your furnace model. Refer to your furnace's specific manual for correct settings.
4. **Verify Connections:** Double-check all wiring connections for accuracy and security.

4.4. Post-Installation

1. **Close Access Panel:** Securely close the furnace access panel.
2. **Restore Power:** Turn on the main power supply to the furnace at the circuit breaker.
3. **Test Operation:** Initiate a heating cycle to verify proper furnace operation. Observe the LED indicators (DS1, DS2) for any diagnostic codes.

5. OPERATION

Once installed, the 50A65-5165 Ignition Board operates automatically to control the furnace's heating cycle. The board manages the following key functions:

- **Call for Heat:** Upon receiving a call for heat from the thermostat, the board initiates the pre-purge cycle.
- **Inducer Motor Activation:** The inducer motor starts to clear any residual gases from the combustion chamber.
- **Pressure Switch Proving:** The board verifies that the pressure switch closes, indicating proper airflow.
- **Ignition Sequence:** The igniter is energized, followed by the opening of the gas valve.
- **Flame Sensing:** The board continuously monitors the flame presence. If a flame is not detected within a specified time, the board will attempt re-ignition or enter a lockout state for safety.
- **Blower Motor Control:** Once the heat exchanger reaches operating temperature, the board activates the main blower motor to distribute heated air.
- **Post-Purge Cycle:** After the call for heat ends, the board ensures the inducer motor and blower motor run for a short period to clear remaining gases and dissipate residual heat.

The LED indicators (DS1, DS2) provide visual feedback on the board's status and can flash specific codes to indicate operational issues or fault conditions. Refer to the troubleshooting section for interpreting these codes.

6. MAINTENANCE

The 50A65-5165 Ignition Board itself requires minimal maintenance. However, regular maintenance of the overall furnace system is crucial for its longevity and efficient operation.

- **Annual Furnace Inspection:** It is recommended to have your furnace inspected annually by a qualified HVAC technician.
- **Air Filter Replacement:** Regularly replace or clean your furnace's air filter as per the manufacturer's recommendations. A dirty filter can restrict airflow, leading to system inefficiencies and potential component stress.
- **Clean Combustion Area:** Ensure the combustion chamber and burner area are free from dust, debris, or obstructions.
- **Check Wiring:** Periodically inspect all wiring connections to the board and other furnace components for looseness or signs of wear. Ensure power is disconnected before inspection.
- **Keep Board Clean:** If accessing the board, gently clean any dust accumulation with a soft brush or compressed air. Do not use liquids.

7. TROUBLESHOOTING

This section provides common troubleshooting steps for issues related to the ignition board. Always disconnect power before performing any inspection or repair.

Common Issues and Solutions

Problem	Possible Cause	Solution
Furnace not igniting	No power to board, faulty igniter, gas valve issue, flame sensor dirty/faulty, pressure switch issue.	Check circuit breaker. Inspect igniter for cracks. Verify gas supply. Clean or replace flame sensor. Check pressure switch hose and operation.
Blower runs continuously	Thermostat fan setting, stuck relay on board, faulty limit switch.	Check thermostat fan setting (should be "Auto"). If problem persists, board may need replacement. Consult a technician for limit switch check.
No heat, but blower works	Ignition failure, gas supply issue, flame sensor issue.	Follow steps for "Furnace not igniting". Ensure gas valve is open.
Diagnostic LED flashing codes	Specific fault condition detected by the board.	Refer to your furnace's specific manual for the interpretation of flash codes from DS1 and DS2. Common codes indicate issues like pressure switch failure, flame loss, or rollout switch trip.
Board appears dead (no LEDs)	No power, blown fuse (F1), severely faulty board.	Check circuit breaker. Inspect and replace the fuse (F1) if blown (ensure correct amperage, likely 5 Amp). Verify incoming voltage to the board.

If troubleshooting steps do not resolve the issue, it is recommended to contact a qualified HVAC technician for further diagnosis and repair.

8. SPECIFICATIONS

The following are the technical specifications for the WHITE RODGERS 50A65-5165 Ignition Board:

- **Model Number:** 50A65-5165
- **Manufacturer:** White Rodgers / Emerson
- **Input Voltage:** 24 VAC, 50/60 Hz
- **Replaces Trane Models:** 50A65-474, 50A65-475, 50A65-476, CNT03076, CNT03798, CNT05164, CNT05165, D341213P01, D341396P01, D341396P03, D341396P04, D341396P05
- **Package Dimensions:** 7.87 x 5.43 x 2.56 inches
- **Item Weight:** 1 pound
- **Included Components:** Rod

9. SUPPORT & WARRANTY

For technical assistance or inquiries regarding the WHITE RODGERS 50A65-5165 Ignition Board, please contact Emerson customer support or a qualified HVAC professional.

This product is typically covered by a manufacturer's warranty. Please refer to the warranty documentation provided with your purchase for specific terms and conditions. Extended protection plans may also be available for purchase.

For additional resources and product information, visit the [Emerson official website](#).

