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› Bussmann FRS-R-60 Fuse User Manual

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Fusetron Dual Element Time-Delay Current Limiting Class RK5 Fuse

1. INTRODUCTION

This manual provides essential information for the safe and effective use of the Bussmann FRS-R-60 Fusetron Dual Element Time-Delay Current Limiting Class RK5 Fuse. Please read this manual thoroughly before installation or operation to ensure proper handling and to prevent potential hazards.

2. SAFETY INFORMATION

WARNING: Electrical shock hazard. Always disconnect power before installing or removing fuses. This product is designed for use by qualified personnel only. Failure to follow these instructions may result in serious injury or death. This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, visit www.P65Warnings.ca.gov.

- Ensure the fuse rating matches the circuit requirements.
- Do not use damaged fuses.
- Always use appropriate personal protective equipment (PPE) when working with electrical systems.
- Consult local electrical codes and regulations for proper installation procedures.

3. PRODUCT OVERVIEW

The Bussmann FRS-R-60 is a 60 Amp, 600 Volt, Class RK5 Fusetron Dual Element Time-Delay Current Limiting Fuse. It is designed to provide superior protection for motors and other inductive loads against overcurrents and short circuits, while also offering time-delay characteristics to prevent nuisance blowing from temporary overloads.



Figure 3.1: Bussmann FRS-R-60 Fuse. This image shows the cylindrical fuse with brass end caps and a label indicating "Fusetron" and "FRS-R".



Figure 3.2: Bussmann Brand Logo. The logo features "COOPER" with a red triangle above it, and "Bussmann" in large black letters on a yellow background, with the tagline "Productivity Through Protection™".

Key Features:

- **Dual Element Construction:** Provides both short-circuit and overload protection.
- **Time-Delay:** Allows for temporary overloads common in motor starting without nuisance blowing.
- **Current Limiting:** Reduces fault current magnitude and duration, minimizing damage to equipment.
- **Class RK5:** Meets industry standards for performance and interchangeability.
- **UL Listed:** Certified for safety and performance.

4. SETUP AND INSTALLATION

Proper installation is crucial for the safe and effective operation of the fuse. Always ensure power is disconnected before beginning installation.

1. **Power Disconnection:** Locate the main power source to the circuit where the fuse will be installed and turn it off. Verify zero voltage with a suitable testing device.
2. **Fuse Holder Compatibility:** Ensure the fuse holder or disconnect switch is rated for 60 Amps and 600 Volts and is compatible with Class RK5 fuses.
3. **Fuse Insertion:** Carefully insert the FRS-R-60 fuse into the designated fuse clips or holder. Ensure a secure and firm connection.
4. **Verification:** Double-check that the fuse is properly seated and that all connections are tight.
5. **Power Restoration:** Once installation is complete and verified, restore power to the circuit.

5. OPERATING PRINCIPLES

The Bussmann FRS-R-60 fuse operates by interrupting the flow of current when an overcurrent condition occurs. Its dual-element, time-delay design allows it to withstand temporary inrush currents (e.g., motor starting) without opening, while still providing rapid protection against severe short circuits.

When an overload occurs, the time-delay element heats up and eventually melts, opening the circuit. In the event of a short circuit, the current-limiting element reacts quickly to melt and clear the fault, limiting the peak current and energy let-through to protect downstream equipment.

6. MAINTENANCE

Fuses are generally maintenance-free devices. However, periodic inspection of the fuse and its holder is recommended to ensure continued reliable operation.

- **Visual Inspection:** Periodically inspect the fuse for any signs of physical damage, discoloration, or arcing. Replace any fuse that shows signs of damage.
- **Connection Integrity:** Ensure that the fuse clips or holder connections are clean and tight. Loose connections can lead to overheating and premature fuse failure.
- **Replacement:** If a fuse blows, always replace it with a fuse of the exact same type, voltage rating, and ampere rating (e.g., FRS-R-60). Never substitute with a fuse of a different rating or type.

7. TROUBLESHOOTING

If the fuse blows, it indicates an overcurrent condition in the circuit. Do not simply replace the fuse without investigating

the cause.

Common Issues and Solutions:

Problem	Possible Cause	Solution
Fuse blows immediately upon power-up.	Direct short circuit in the load or wiring.	Locate and clear the short circuit. Inspect wiring and load for faults.
Fuse blows after a short period of operation.	Sustained overload, motor stall, or component failure.	Check load current, motor condition, and other circuit components for excessive current draw.
Fuse appears discolored or overheated but not blown.	Loose connections or undersized fuse holder.	Disconnect power, inspect and tighten connections. Ensure fuse holder is rated for the fuse's current. Replace fuse if discolored.

If the problem persists after troubleshooting, consult a qualified electrician or electrical professional.

8. SPECIFICATIONS

Model: FRS-R-60
Brand: Bussmann
Ampere Rating: 60 Amps
Voltage Rating: 600 Volts AC
Fuse Class: RK5
Element Type: Dual Element, Time-Delay
Interrupting Rating: 200kA RMS Sym. (UL)
Material: Copper (end caps)
Dimensions (L x W x H): Approximately 1 x 6 x 1 inches
Weight: Approximately 6.4 ounces
Compliance: UL Listed
UPC: 610395594055, 616469728616

9. WARRANTY AND SUPPORT

For specific warranty information regarding your Bussmann FRS-R-60 fuse, please refer to the official Bussmann website or contact their customer support directly. Fuses are consumable protective devices and are typically not covered by extensive warranties once installed, as their function is to sacrifice themselves to protect the circuit.

Bussmann Customer Support:

- **Website:** www.eaton.com/us/en-us/products/electrical-circuit-protection/fuses.html (Bussmann is an Eaton brand)
- Refer to the website for contact numbers and further support resources.

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