## Bussmann LPS-RK-050

# Bussmann LPS-RK-50SP Dual-Element, Time-Delay Fuse Instruction Manual

Model: LPS-RK-050 | Brand: Bussmann

## 1. Introduction

This instruction manual provides essential information for the safe and effective use of the Bussmann LPS-RK-50SP Dual-Element, Time-Delay Fuse. This fuse is designed for ultimate protection in various electrical applications, offering current-limiting capabilities and a time-delay characteristic to prevent nuisance tripping.

Please read this manual thoroughly before installation or operation and retain it for future reference. Proper installation and adherence to safety guidelines are crucial for optimal performance and safety.

## 2. Product Overview and Features

The Bussmann LPS-RK-50SP is a Class RK1 dual-element, time-delay, current-limiting fuse. It is engineered to provide superior protection for electrical systems.


**Figure 2.1:** Bussmann LPS-RK-50SP Dual-Element, Time-Delay Fuse. This image shows a yellow cylindrical fuse with copper end caps, clearly labeled with its model number, protection type, voltage, and interrupting ratings.

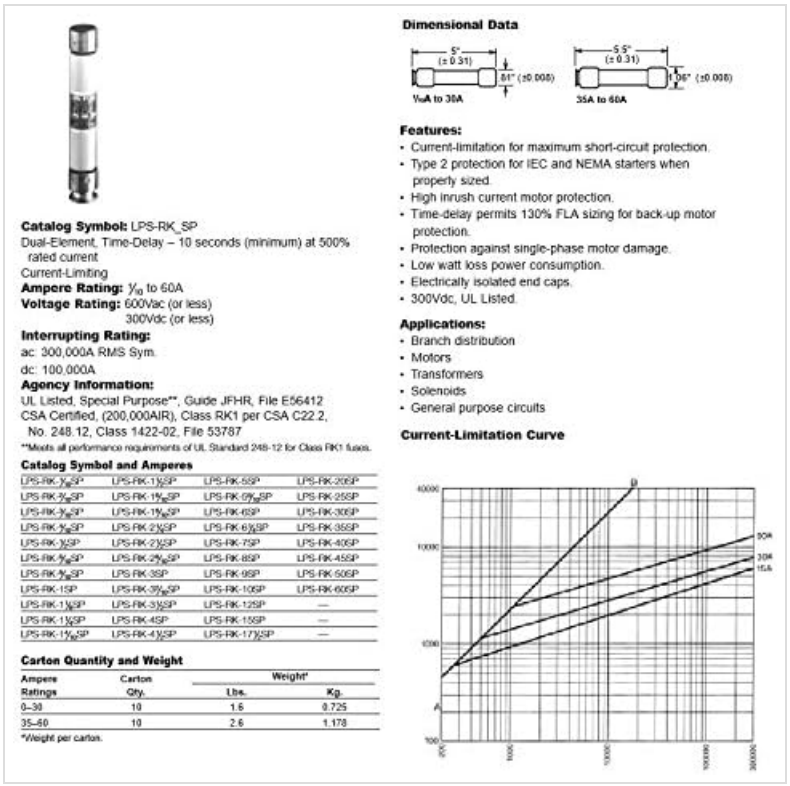
## Key Features:

- **Dual-Element Design:** Provides both short-circuit and overload protection.
- **Time-Delay Characteristic:** Allows for temporary overcurrents (e.g., motor starting) without nuisance tripping, while still providing protection against sustained overloads. Permits 130% Full Load Amperage (FLA) sizing for back-up motor protection.
- **Current-Limiting:** Reduces the magnitude and duration of short-circuit currents, minimizing damage to electrical components. Offers maximum short-circuit protection.
- **Class RK1:** Indicates high interrupting rating and current-limiting capabilities.
- **Voltage Rating:** 600V AC and 300V DC.
- **High Inrush Current Motor Protection:** Designed to handle the high current surges associated with motor startup.
- **Protection Against Single-Phase Motor Damage:** Helps safeguard motors from damage due to single-phasing conditions.
- **Low Watt Loss Power Consumption:** Efficient operation reduces energy waste.
- **Electrically Isolated End Caps:** Enhances safety during handling and installation.
- **UL Listed:** Certified for safety and performance by Underwriters Laboratories.

## Typical Applications:

- Feeder and Branch Circuits
- Transformers
- Motors
- Solenoids
- General Purpose Circuits
- Branch Distribution

## 3. Specifications



**Catalog Symbol:** LPS-RK_SP
Dual-Element, Time-Delay – 10 seconds (minimum) at 500% rated current
Current-Limiting
**Ampere Rating:** 1/10 to 60A
**Voltage Rating:** 600Vac (or less)
300Vdc (or less)
**Interrupting Rating:**
ac: 300,000A RMS Sym.
dc: 100,000A
**Agency Information:**
UL Listed, Special Purpose**, Guide JFHR, File E56412
CSA Certified, (200,000AIR), Class RK1 per CSA C22.2, No. 248.12, Class 1422-02, File 53787
**Meets all performance requirements of UL Standard 248-12 for Class RK1 fuses.

**Catalog Symbol and Amperes**

| | | | |
|---|---|---|---|
| LPS-RK-1/10SP | LPS-RK-1 1/2SP | LPS-RK-5SP | LPS-RK-20SP |
| LPS-RK-2/10SP | LPS-RK-1 8/10SP | LPS-RK-6 2/10SP | LPS-RK-25SP |
| LPS-RK-3/10SP | LPS-RK-1 9/10SP | LPS-RK-6SP | LPS-RK-30SP |
| LPS-RK-4/10SP | LPS-RK-2 1/2SP | LPS-RK-6 1/2SP | LPS-RK-35SP |
| LPS-RK-1/2SP | LPS-RK-2 1/2SP | LPS-RK-7SP | LPS-RK-40SP |
| LPS-RK-6/10SP | LPS-RK-2 4/10SP | LPS-RK-8SP | LPS-RK-45SP |
| LPS-RK-7/10SP | LPS-RK-3SP | LPS-RK-9SP | LPS-RK-50SP |
| LPS-RK-15P | LPS-RK-3 2/10SP | LPS-RK-10SP | LPS-RK-60SP |
| LPS-RK-1 1/10SP | LPS-RK-3 1/2SP | LPS-RK-12SP | — |
| LPS-RK-1 1/2SP | LPS-RK-4SP | LPS-RK-15SP | — |
| LPS-RK-1 6/10SP | LPS-RK-4 1/2SP | LPS-RK-17 1/2SP | — |

**Carton Quantity and Weight**

| Ampere Ratings | Carton Qty. | Weight* Lbs. | Kg. |
|---|---|---|---|
| 0–30 | 10 | 1.6 | 0.725 |
| 35–60 | 10 | 2.6 | 1.178 |

*Weight per carton.

**Dimensional Data**




**Features:**
- Current-limitation for maximum short-circuit protection.
- Type 2 protection for IEC and NEMA starters when properly sized.
- High inrush current motor protection.
- Time-delay permits 130% FLA sizing for back-up motor protection.
- Protection against single-phase motor damage.
- Low watt loss power consumption.
- Electrically isolated end caps.
- 300Vdc, UL Listed.

**Applications:**
- Branch distribution
- Motors
- Transformers
- Solenoids
- General purpose circuits

**Current-Limitation Curve**



**Figure 3.1:** Technical specifications and performance curves for Bussmann LPS-RK-SP fuses. This image displays dimensional data, a detailed list of features, typical applications, and a current-limitation curve graph for various fuse ratings.

| Specification | Value |
|---|---|
| Model Number | LPS-RK-050 |
| Part Number | LPS-RK-50SP |
| Brand | Bussmann |
| Amperage Rating | 50 Amps |
| Voltage Rating (AC) | 600 Volts AC |
| Voltage Rating (DC) | 300 Volts DC |
| Interrupting Rating (AC) | 300,000 Amps RMS Symmetrical |
| Interrupting Rating (DC) | 100,000 Amps |
| Fuse Class | RK1 |
| Dimensions (L x W x H) | 1 x 5 x 1 inches |
| Material | Copper |
| Mounting Type | Surface Mount (for compatible fuse holders) |
| Item Weight | 4.8 ounces |
| Agency Listings | UL Listed, CSA Certified |

## 4. Installation and Setup

Installation of electrical fuses should only be performed by qualified personnel in accordance with all national and local electrical codes and safety regulations.

### Installation Steps:

1. **Safety First:** Ensure that the circuit to be protected is completely de-energized and locked out/tagged out before beginning any work. Verify with a voltage tester.
2. **Verify Fuse Rating:** Confirm that the Bussmann LPS-RK-50SP fuse (50 Amps, 600V AC/300V DC) matches the required rating for the circuit and equipment being protected. Using an incorrect fuse rating can lead to equipment damage or fire.
3. **Inspect Fuse Holder:** Ensure the fuse holder is clean, free from corrosion, and compatible with Class RK1 fuses.
4. **Insert Fuse:** Carefully insert the fuse into the appropriate fuse holder clips. Ensure a firm and secure connection. Do not force the fuse into place.
5. **Secure Connections:** If applicable, ensure all connections to the fuse holder are tightened to the manufacturer's specifications.
6. **Re-energize Circuit:** Once the fuse is securely installed and all safety checks are complete, the circuit can be re-energized.

**Important:** Never bypass a fuse or use a fuse with a higher amperage rating than specified for the circuit. This can lead to severe electrical hazards and equipment damage.

## 5. Operation

The Bussmann LPS-RK-50SP fuse operates passively to protect electrical circuits and equipment from

overcurrent conditions. When installed correctly, it continuously monitors the current flow.

- **Normal Operation:** Under normal operating conditions, the fuse allows current to flow unimpeded through the circuit.
- **Overload Protection:** In the event of a sustained overload (current exceeding the fuse's rating but not a direct short circuit), the time-delay element will activate, allowing a brief period for temporary overcurrents to subside before interrupting the circuit. This prevents unnecessary shutdowns.
- **Short-Circuit Protection:** In the event of a severe short circuit, the current-limiting element rapidly melts, interrupting the circuit almost instantaneously. This quick response minimizes the destructive energy of the short circuit, protecting upstream and downstream components.

Once a fuse has interrupted a circuit due to an overcurrent condition, it must be replaced. It is a single-use protective device.

## 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. Ensure the fuse is securely seated in its holder.
- **Contact Integrity:** Check that the fuse holder clips maintain good contact with the fuse ends. Loose connections can lead to overheating and premature fuse failure.
- **Replacement:** A fuse that has operated (blown) to interrupt a circuit must be replaced with a new fuse of the exact same type, voltage, and amperage rating (Bussmann LPS-RK-50SP). Never attempt to repair a blown fuse.
- **Cleaning:** Ensure the fuse holder and surrounding area are kept clean and free from dust, dirt, and moisture, which can affect electrical conductivity and heat dissipation.

Always de-energize the circuit before performing any inspection or maintenance on the fuse or fuse holder.

## 7. Troubleshooting

If the Bussmann LPS-RK-50SP fuse blows, it indicates an overcurrent condition in the circuit it protects. Follow these steps to troubleshoot:

1. **De-energize Circuit:** Immediately turn off power to the affected circuit at the main breaker or disconnect switch.
2. **Identify Blown Fuse:** Visually inspect the fuse. Some fuses may have an indicator, but often a continuity tester is needed to confirm if the fuse has blown.
3. **Determine Cause:** Investigate the cause of the overcurrent. Common causes include:
    - Overloaded circuit (too many devices drawing power).
    - Short circuit in wiring or equipment.
    - Faulty appliance or motor.
    - Ground fault.
4. **Correct the Fault:** Before replacing the fuse, resolve the underlying issue that caused it to blow. If the cause cannot be identified or corrected, consult a qualified electrician.
5. **Replace Fuse:** Replace the blown fuse with a new Bussmann LPS-RK-50SP fuse of the identical amperage and voltage rating. Never use a fuse with a different rating or bypass the fuse.
6. **Re-energize and Monitor:** Restore power to the circuit. If the new fuse blows immediately, there is

still an unresolved fault in the circuit. De-energize immediately and seek professional assistance.

Repeated fuse blowing indicates a persistent problem that requires professional diagnosis and repair.

## 8. Safety Information

Working with electricity can be dangerous. Adhere to the following safety precautions at all times:

- **Qualified Personnel:** Only qualified and authorized personnel should install, maintain, or troubleshoot electrical fuses and circuits.
- **De-energize Circuits:** Always ensure circuits are de-energized, locked out, and tagged out before working on them. Verify zero voltage with a suitable testing device.
- **Personal Protective Equipment (PPE):** Wear appropriate PPE, including safety glasses, insulated gloves, and flame-resistant clothing, when working with electrical systems.
- **Correct Fuse Replacement:** Always replace a blown fuse with a fuse of the exact same type, voltage, and amperage rating. Never substitute with a higher-rated fuse or conductive material.
- **Avoid Wet Conditions:** Do not work on electrical systems in wet or damp conditions.
- **Follow Codes:** All electrical work must comply with national, state, and local electrical codes and regulations (e.g., NEC, NFPA 70E).
- **No Bypassing:** Never bypass or defeat the protective function of a fuse.

## 9. Warranty and Support

Specific warranty information for the Bussmann LPS-RK-50SP fuse is not provided in this manual. For details regarding product warranty, please refer to the official Bussmann website or contact your authorized Bussmann distributor.
For technical support or further inquiries, please contact Bussmann customer service or a qualified electrical professional.

- **Bussmann Official Website:** www.eaton.com/bussmann