

## Juried Engineering CF100-5-05

# Juried Engineering CF100-5-05 Carbon Film Resistor Instruction Manual

Model: CF100-5-05

## 1. PRODUCT OVERVIEW

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The Juried Engineering CF100-5-05 is a carbon film resistor designed for various electronic applications. This component provides a resistance of 100 Ohms with a 5% tolerance and a power rating of 0.5 Watts (1/2W). It features a conformal coating for enhanced durability and flame retardant properties, making it suitable for commercial and industrial use. These resistors are RoHS compliant, lead-free, and halogen-free, ensuring environmental safety.

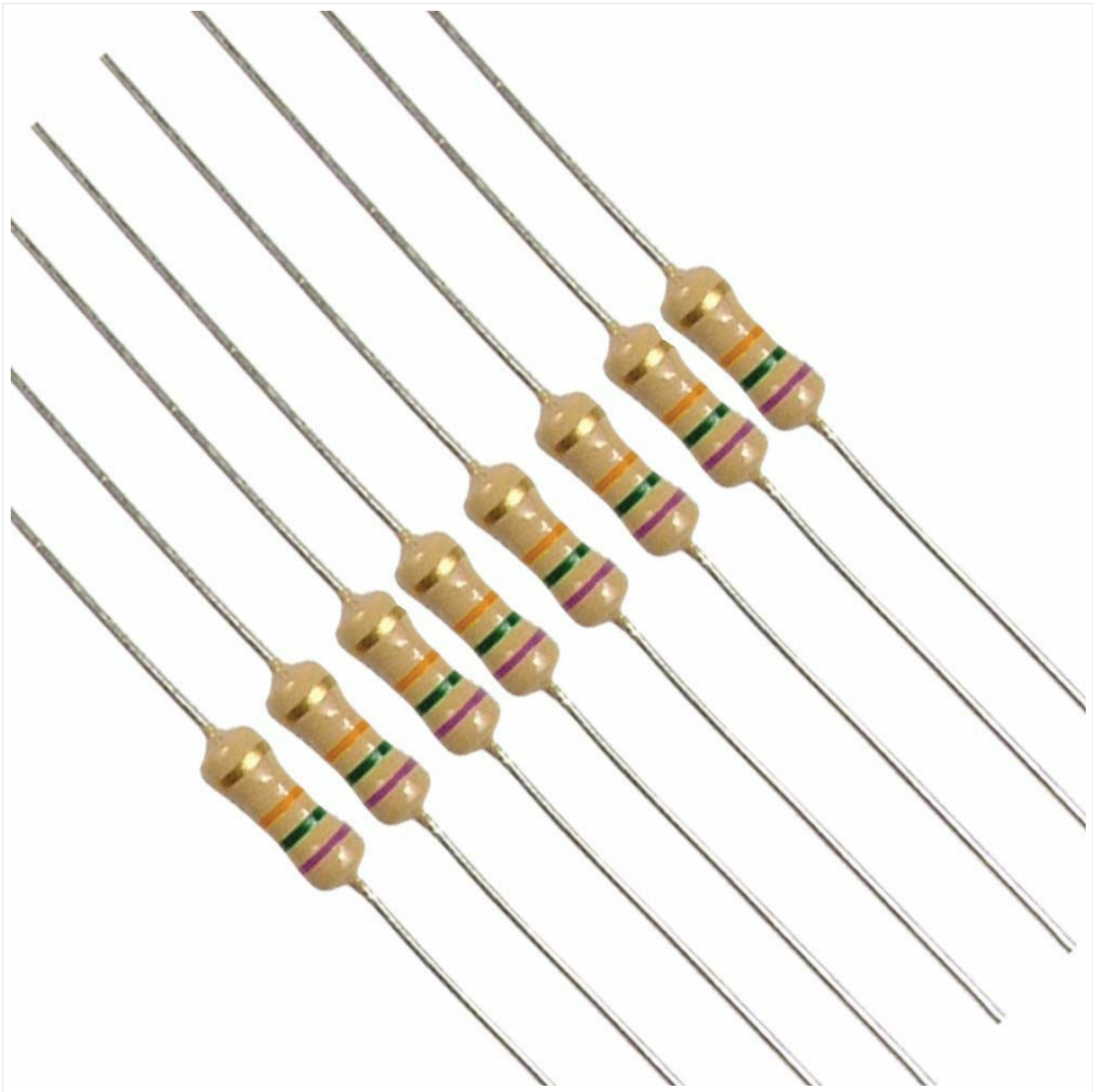


Figure 1: A pack of Juried Engineering CF100-5-05 carbon film resistors. These resistors are characterized by their beige body with colored bands indicating resistance and tolerance, and thin metal leads for circuit integration.

### Key Features:

- **Resistance:** 100 Ohms
- **Tolerance:** 5%
- **Power Rating:** 0.5 Watts (1/2W)
- **Coating:** Conformal, Flame Retardant
- **Lead Wire:** Standard 0.022 inches (0.55 mm) copper plated steel with 100% tin overplate, suitable for solderless breadboards.
- **Compliance:** RoHS compliant, lead-free, and halogen-free.

## 2. SETUP AND INSTALLATION

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Proper handling and installation are crucial for the optimal performance and longevity of the carbon film resistor. Follow these guidelines:

1. **Identification:** Before installation, verify the resistor's value using the color code bands. The CF100-5-05 resistor will typically have bands indicating 100 Ohms and 5% tolerance.

2. **Lead Preparation:** The resistor features standard 0.022-inch (0.55 mm) copper-plated steel leads with a tin overplate. These leads are designed for easy insertion into solderless breadboards or for soldering into printed circuit boards (PCBs). Bend the leads carefully to avoid stressing the resistor body.
3. **Placement:** Insert the resistor leads into the designated points on your circuit board or breadboard. Ensure a secure connection.
4. **Soldering (if applicable):** When soldering, use appropriate soldering techniques to prevent overheating the resistor. Apply heat for the minimum duration necessary to form a good solder joint.
5. **Environmental Considerations:** While the resistor has a conformal coating, avoid exposing it to excessive moisture, extreme temperatures, or corrosive environments beyond its specified operating conditions.



Figure 2: A close-up view of a single Juried Engineering CF100-5-05 resistor, showing its beige body, color bands, and metallic leads.

### 3. OPERATING PRINCIPLES

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The CF100-5-05 carbon film resistor functions by opposing the flow of electric current in a circuit. Its primary applications include:

- **Current Limiting:** Used to reduce the current flowing through a specific part of a circuit, protecting other components.

- **Voltage Division:** When combined with other resistors, it can create a voltage divider to provide a specific voltage level.
- **Signal Conditioning:** Employed in filters, oscillators, and other signal processing circuits.
- **Pull-up/Pull-down Resistors:** Used to define a default state for digital inputs.

Ensure that the power dissipated by the resistor ( $P = I^2R$  or  $P = V^2/R$ ) does not exceed its 0.5W rating to prevent damage or premature failure. Always consider the maximum voltage and current ratings of the resistor in your circuit design.

## 4. MAINTENANCE AND STORAGE

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Carbon film resistors are passive components and generally require minimal maintenance. However, proper storage and handling practices will ensure their reliability:

- **Storage:** Store resistors in a dry, cool environment, away from direct sunlight and excessive humidity. Keep them in their original packaging or in anti-static bags to protect the leads and body.
- **Handling:** Avoid bending the leads sharply at the resistor body, as this can cause internal damage. Handle components by their body rather than their leads when possible.
- **Cleaning:** If necessary, gently clean the resistor body with a soft, dry cloth. Avoid using harsh chemicals or abrasive materials.
- **Inspection:** Periodically inspect resistors in active circuits for signs of physical damage, discoloration (indicating overheating), or loose connections.

## 5. TROUBLESHOOTING

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If you encounter issues with a resistor in your circuit, consider the following troubleshooting steps:

- **Incorrect Resistance Reading:**
  - Verify the color code bands to ensure the correct resistor value was selected.
  - Measure the resistance with a multimeter. If it deviates significantly from 100 Ohms (outside the 5% tolerance), the resistor may be faulty.
  - Check for poor connections or cold solder joints in the circuit.
- **Overheating/Discoloration:**
  - This indicates excessive power dissipation. Recalculate the power ( $P = I^2R$ ) in the circuit to ensure it does not exceed the 0.5W rating.
  - Ensure proper ventilation around the resistor if it's in an enclosed space.
  - Consider using a resistor with a higher power rating if the calculated power dissipation is consistently near or above 0.5W.
- **Open Circuit (No Current Flow):**
  - Check for a broken lead or a complete internal failure of the resistor. A multimeter will show infinite resistance.
  - Inspect solder joints or breadboard connections for continuity.

Always ensure power is disconnected from the circuit before performing any physical inspection or component replacement.

## 6. TECHNICAL SPECIFICATIONS

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Specification	Value
Model Number	CF100-5-05
Type	Carbon Film Resistor
Resistance	100 Ohms
Tolerance	5%
Power Rating	0.5 Watts (1/2W)
Coating	Conformal, Flame Retardant
Lead Wire Material	Copper plated steel with 100% tin overplate
Lead Wire Diameter	0.022 inches (0.55 mm)
Compliance	RoHS compliant, Lead-free, Halogen-free
Manufacturer	Juried Engineering
Date First Available	February 7, 2019

## 7. WARRANTY AND SUPPORT

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For specific warranty information regarding the Juried Engineering CF100-5-05 Carbon Film Resistor, please refer to the terms and conditions provided at the time of purchase or contact Juried Engineering directly.

For further technical support or inquiries, you may visit the official Juried Engineering store on Amazon:

[Juried Engineering Amazon Store](#)