

JESSINIE 74896

JESSINIE RP-L Film Pressure Sensor (Model 74896) User Manual

Flexible Resistive Film Pressure Detector

1. INTRODUCTION

This manual provides detailed instructions for the JESSINIE RP-L Film Pressure Sensor, Model 74896. This flexible resistive film pressure sensor is designed for various applications requiring precise pressure detection. Please read this manual thoroughly before use to ensure proper installation and operation.

2. PRODUCT OVERVIEW

The JESSINIE RP-L Film Pressure Sensor is a versatile component capable of detecting static and dynamic pressure. Its flexible design allows for integration into various systems. Key features include:

- **Trigger Force:** Less than 20g, with a default resistance value less than 200k Ω upon trigger.
- **Pressure Sensing Range:** 20g to 10kg or more.
- **Pressure Mode:** Static or dynamic (frequency within 10Hz).
- **Resistance (Untriggered):** Greater than 10M Ω .
- **Activation Time:** Less than 0.01 seconds.
- **Operating Temperature:** -40 °C to 85 °C.
- **Durability:** Over 1 million cycles.

Common applications include in-bed/off-bed monitoring, sleep state monitoring, intelligent running shoes for pressure intensity and frequency recording, intelligent switches to prevent misoperation, and counters for pressure events.

Product Images

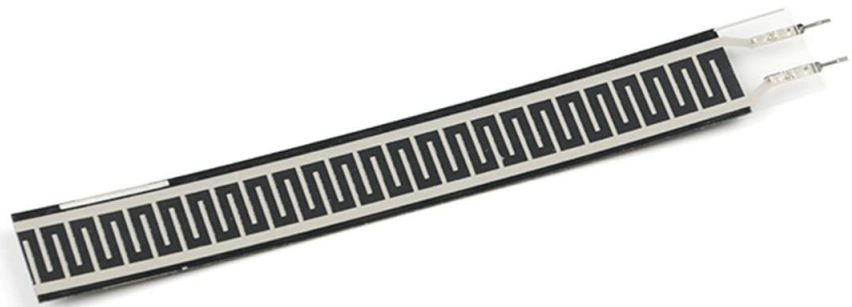
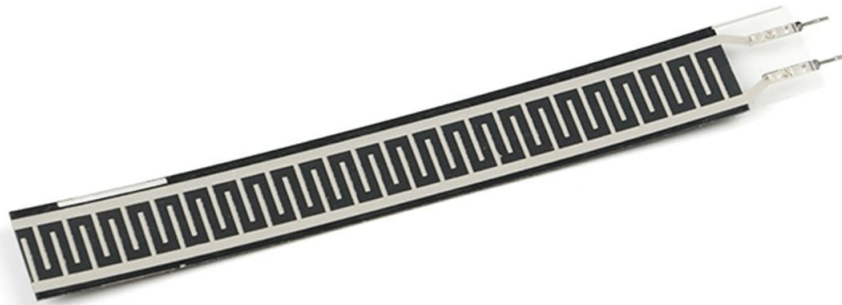


Figure 2.1: Top view of the JESSINIE RP-L Film Pressure Sensor, showing the flexible strip with sensing elements and connection pins.

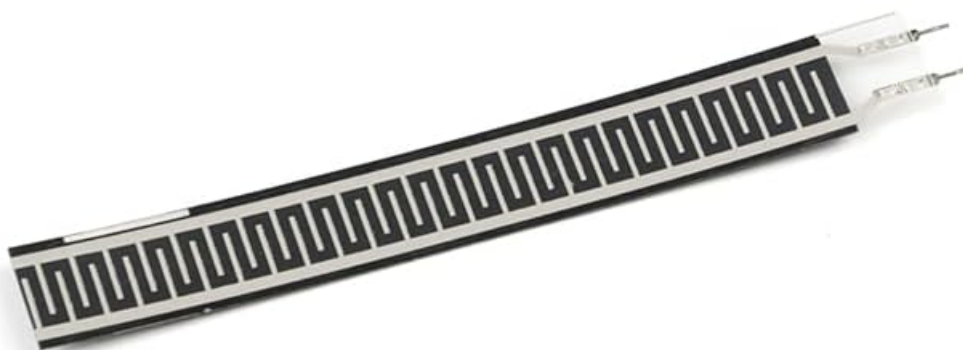


Figure 2.2: Side view of the JESSINIE RP-L Film Pressure Sensor, highlighting its thin and flexible profile.



Figure 2.3: Close-up view of the connection pins on the JESSINIE RP-L Film Pressure Sensor, ready for integration into a circuit.



Figure 2.4: The JESSINIE RP-L Film Pressure Sensor demonstrating its flexibility, allowing for adaptation to various surfaces and applications.

3. SPECIFICATIONS

Feature	Specification
Brand	JESSINIE
Model Number	74896
Included Components	2 pressure sensors
Trigger Force	< 20g (resistance < 200kΩ)
Pressure Sensing Range	20g ~ 10kg+
Pressure Mode	Static or Dynamic (frequency within 10Hz)
Resistance (Untriggered)	> 10MΩ
Activation Time	< 0.01S
Operating Temperature	-40 °C ~ 85 °C
Durability	> 1 million times

4. SETUP

The RP-L Film Pressure Sensor is a resistive sensor, meaning its resistance changes in response to applied

pressure. To set up the sensor for use, follow these general steps:

1. **Identify Connection Points:** The sensor has two conductive pins at one end. These are the terminals for connecting the sensor to your circuit.
2. **Prepare Your Circuit:** Typically, this sensor is used in a voltage divider configuration with a fixed resistor to convert the resistance change into a measurable voltage change. Connect one sensor pin to a voltage source (e.g., 3.3V or 5V) and the other pin to one end of a pull-down resistor (e.g., 10kΩ). Connect the other end of the pull-down resistor to ground. The output voltage can be read from the point between the sensor and the pull-down resistor.
3. **Connect to Microcontroller (Optional):** If using a microcontroller (like Arduino, ESP32, etc.), connect the output voltage from the voltage divider to an analog input pin on your microcontroller.
4. **Secure the Sensor:** Place the flexible sensor in the desired location where pressure is to be detected. Ensure it is flat and free from kinks or sharp bends that could damage the film.
5. **Initial Testing:** Before applying pressure, measure the resistance across the sensor pins (or the output voltage from your voltage divider) to establish a baseline (untriggered state).

Note: Avoid excessive bending or creasing of the sensor, as this may affect its performance or lead to damage.

Setup and Testing Videos

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Video 4.1: Demonstration of a thin film pressure sensor, showing how it responds to pressure with visual feedback (LED color change). This video illustrates the basic principle of operation.

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Video 4.2: A flexible resistive film pressure sensor being tested with a multimeter. This video demonstrates how the resistance changes as pressure is applied to the sensor.

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Video 4.3: Overview of a thin film pressure sensor, showcasing its physical characteristics and potential applications.

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Video 4.4: Testing a thin film pressure sensor (ZD10-100 500g) to show its response to varying pressure levels.

5. OPERATING INSTRUCTIONS

Once the sensor is correctly wired and integrated into your system, its operation is based on the principle of variable resistance:

1. **No Pressure:** In its default state, with no pressure applied, the sensor exhibits a very high resistance (typically $> 10\text{M}\Omega$).
2. **Pressure Application:** When pressure is applied to the active sensing area of the film, the resistance of the sensor decreases. The greater the pressure, the lower the resistance.
3. **Signal Interpretation:**
 - If using a voltage divider, increased pressure will lead to a higher output voltage.
 - If measuring resistance directly, increased pressure will show a decrease in resistance.
4. **Calibration:** For precise measurements, it is recommended to calibrate the sensor by applying known weights or forces and recording the corresponding resistance or voltage outputs. This allows you to create a mapping

between the sensor's output and the actual pressure applied.

5. **Dynamic Sensing:** The sensor can respond to dynamic pressure changes up to 10Hz, making it suitable for detecting rapid force variations.

Ensure the pressure is applied evenly across the sensing area for consistent readings. Avoid point loads that could damage the sensor film.

6. MAINTENANCE

The JESSINIE RP-L Film Pressure Sensor is designed for durability, but proper care can extend its lifespan and ensure consistent performance:

- **Handling:** Handle the sensor by its edges or non-sensing areas to avoid damaging the active film.
- **Storage:** Store the sensors flat or gently rolled, avoiding sharp creases or folds. Keep them in a dry, room-temperature environment, away from direct sunlight and extreme temperatures.
- **Cleaning:** If necessary, gently wipe the sensor surface with a soft, dry, lint-free cloth. Do not use abrasive cleaners or solvents.
- **Environmental Conditions:** Operate and store the sensor within the specified operating temperature range (-40 °C to 85 °C) and avoid exposure to corrosive chemicals or excessive moisture.
- **Connection Integrity:** Periodically check the electrical connections for any signs of corrosion or loose wiring, especially if the sensor is in a high-vibration environment.

7. TROUBLESHOOTING

If you encounter issues with your RP-L Film Pressure Sensor, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
No change in resistance/voltage when pressure is applied.	◦ Incorrect wiring. ◦ Sensor damaged. ◦ Insufficient pressure applied to the active area. ◦ Faulty multimeter/readout device.	◦ Verify all connections according to your circuit diagram. ◦ Inspect the sensor for visible damage (creases, tears). Replace if damaged. ◦ Ensure pressure is applied directly to the black sensing area. ◦ Test your multimeter or readout device with a known resistor.
Inconsistent or erratic readings.	◦ Loose connections. ◦ Electrical noise in the circuit. ◦ Uneven pressure application. ◦ Sensor nearing end of life (after many cycles).	◦ Secure all connections. ◦ Add decoupling capacitors or shielding to reduce noise. ◦ Ensure pressure is applied uniformly. ◦ Consider replacing the sensor if it has undergone extensive use.

Problem	Possible Cause	Solution
Sensor resistance is always low (short circuit).	◦ Sensor is permanently damaged (e.g., crushed). ◦ Short circuit in wiring.	◦ Replace the sensor. ◦ Check wiring for unintended contact.
Sensor resistance is always high (open circuit).	◦ Sensor is permanently damaged (e.g., broken trace). ◦ Open circuit in wiring.	◦ Replace the sensor. ◦ Check wiring for breaks or disconnected terminals.

8. WARRANTY AND SUPPORT

JESSINIE products are manufactured to high-quality standards. While specific warranty details are not provided in this manual, please refer to the retailer's return policy or contact JESSINIE customer support for information regarding warranty coverage and technical assistance.

For further support or inquiries, please visit the official JESSINIE store or contact their customer service department.

JESSINIE Store: <https://www.amazon.com/stores/JESSINIE/page/9B68426E-B20E-47C0-A393-C600996A2462>