

DROK DS18B20

DROK DS18B20 Temperature Sensor Probes Instruction Manual

INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of your DROK DS18B20 Waterproof Temperature Sensor Probes. These probes are designed for precise temperature measurement in various environments, compatible with platforms such as Arduino and Raspberry Pi. Please read this manual thoroughly before use to ensure proper functionality and longevity of the product.

PRODUCT OVERVIEW

Key Features

- **Waterproof & Durable Stainless Steel Probe:** Encased in waterproof, corrosion-resistant, rustproof stainless steel with highly thermally conductive sealant, suitable for continuous submersion and harsh conditions.
- **High Accuracy & Wide Temperature Range:** Provides precise temperature readings from -55°C to +125°C (-67°F to +257°F) with an accuracy of $\pm 0.5^{\circ}\text{C}$.
- **Simple Wiring & Quick Integration:** Features clearly separated red (VCC), yellow (Data), and black (GND) wires with heat shrink tubing for easy connection to Arduino, Raspberry Pi, ESP32, and STM.
- **Low Power & Flexible Voltage Operation:** Operates efficiently on a wide voltage range of 3.0V to 5.5V, ensuring compatibility with various microcontrollers.
- **Reliable 1-Wire Interface:** Utilizes the robust Dallas 1-Wire protocol for simplified communication. The adapter board includes an integrated pull-up resistor for direct Raspberry Pi GPIO connection.

Package Contents

- 2 x DS18B20 Temperature Sensor Probes (1m length)
- 2 x Probe Adapter Boards
- 2 x 3-pin Female to Female Dupont Wires (Random Color)
- 2 x 4.7k ohm Resistors

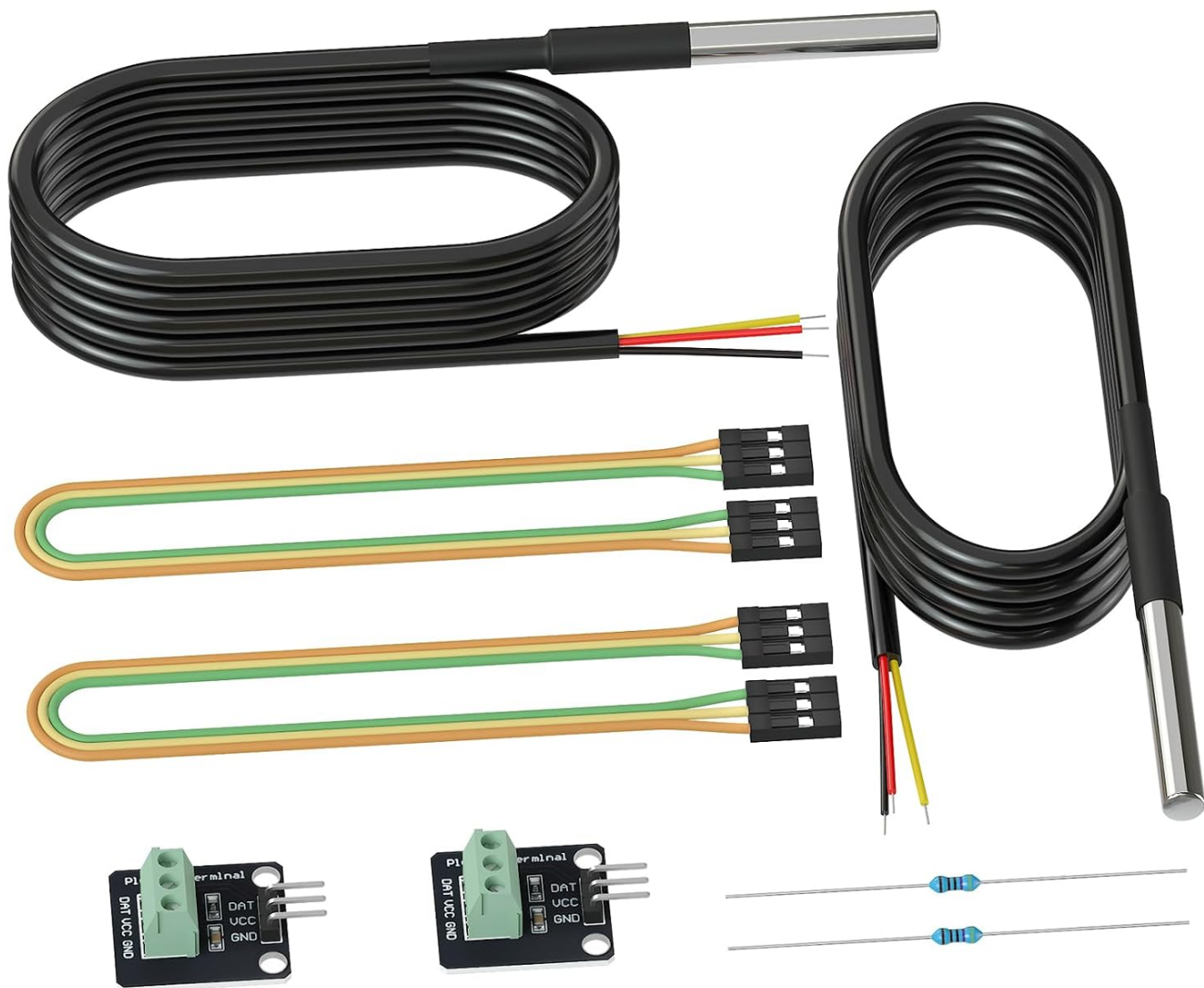


Figure 1: Complete package contents of the DROK DS18B20 Temperature Sensor Probes kit.

ALLIGATOR CLIPS WITH



Figure 2: The DS18B20 probe demonstrating its waterproof, corrosion-resistant, and rustproof design.

PREMIUM MATERIAL

DIGITAL DS18B20 PROBE

HIGHLY THERMALLY CONDUCTIVE SEALANT ENCAPSULATION

HIGH SENSITIVITY

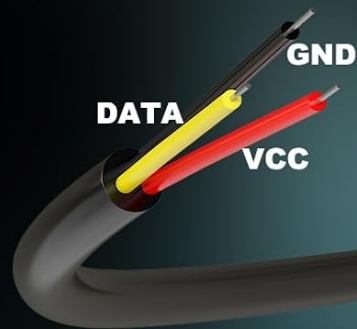
LOW DELAY



PVC SLEEVE

WATERPROOF

CORROSION-RESISTANT



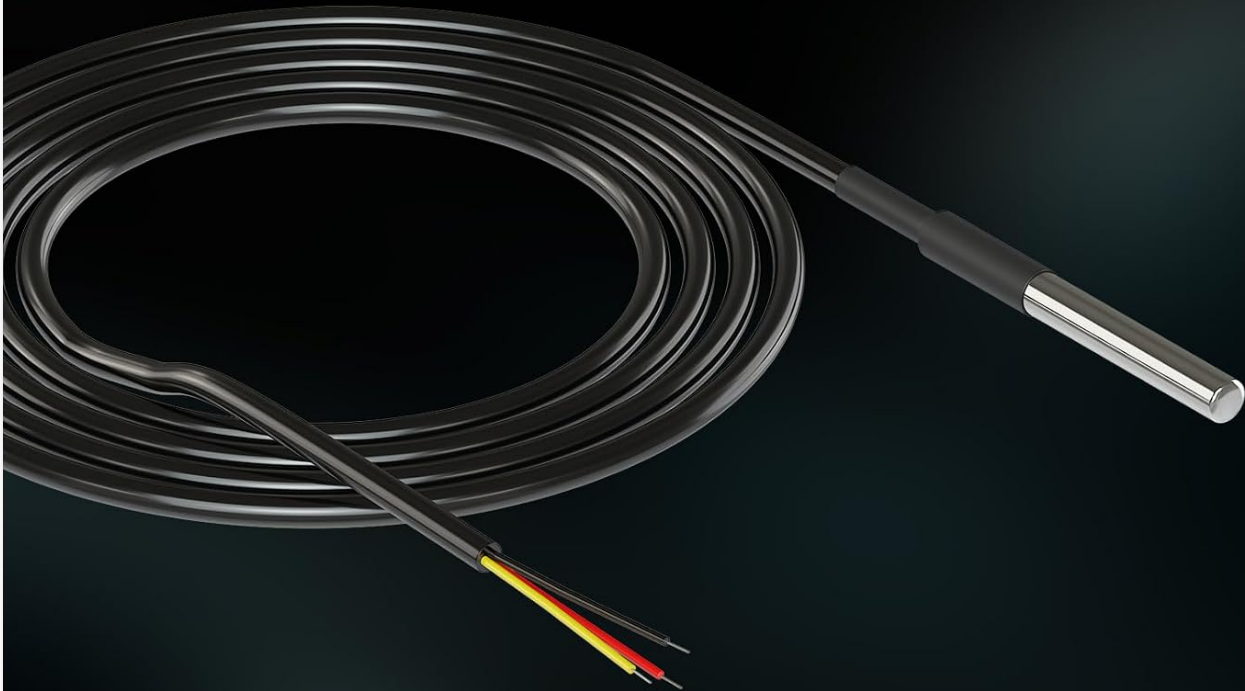
OUTPUT LEAD

SEPARATED BY HEAT SHRINK TUBING

Figure 3: Illustration of the premium DS18B20 probe material, PVC sleeve, and color-coded output leads (Red-VCC, Yellow-DATA, Black-GND).

SPECIFICATIONS

PRODUCT INFORMATION



PRODUCT MATERIAL: Original DS18B20 Sensor Chip

SURFACE TREATMENT: Stainless Steel Seal (IP68 Waterproof/Rustproof)

RESOLUTION: 9~12 Bits Adjustable

TEMPERATURE RANGE: -55°C to +125°C

HIGH ACCURACY: ±0.5°C

OPERATING VOLTAGE: 3V - 5.5V

Figure 4: Key product specifications for the DS18B20 Temperature Sensor.

Specification	Value
Product Material	Original DS18B20 Sensor Chip
Surface Treatment	Stainless Steel Seal (IP68 Waterproof/Rustproof)
Resolution	9~12 Bits Adjustable
Temperature Range	-55°C to +125°C (-67°F to +257°F)
High Accuracy	±0.5°C
Operating Voltage	3.0V - 5.5V
Probe Length	1 meter (39.37 inches)
Item Weight	2.89 ounces

Specification	Value
Package Dimensions	5.94 x 5.91 x 0.79 inches

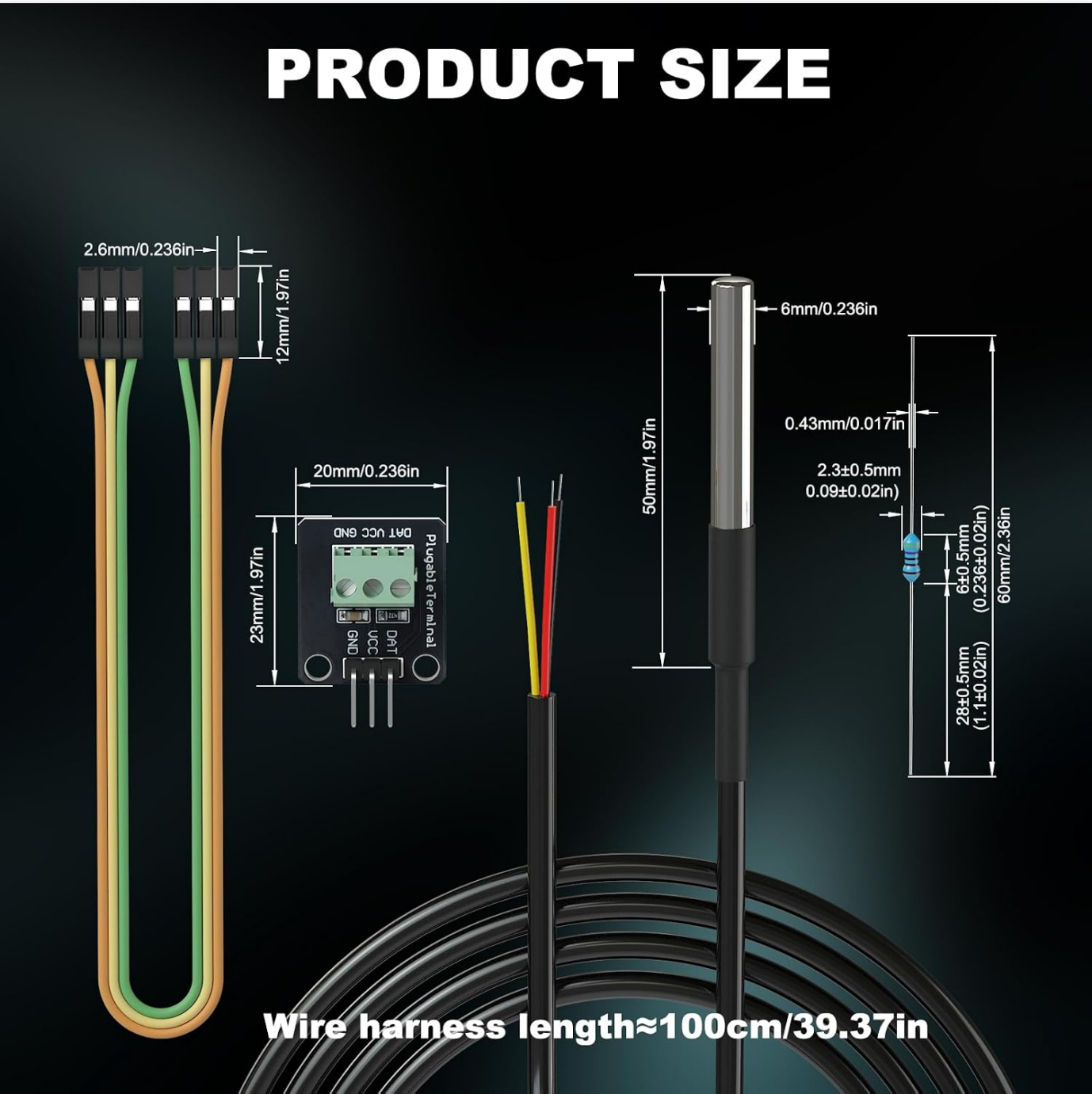


Figure 5: Dimensional drawing of the DS18B20 probe, adapter board, and jumper wires.

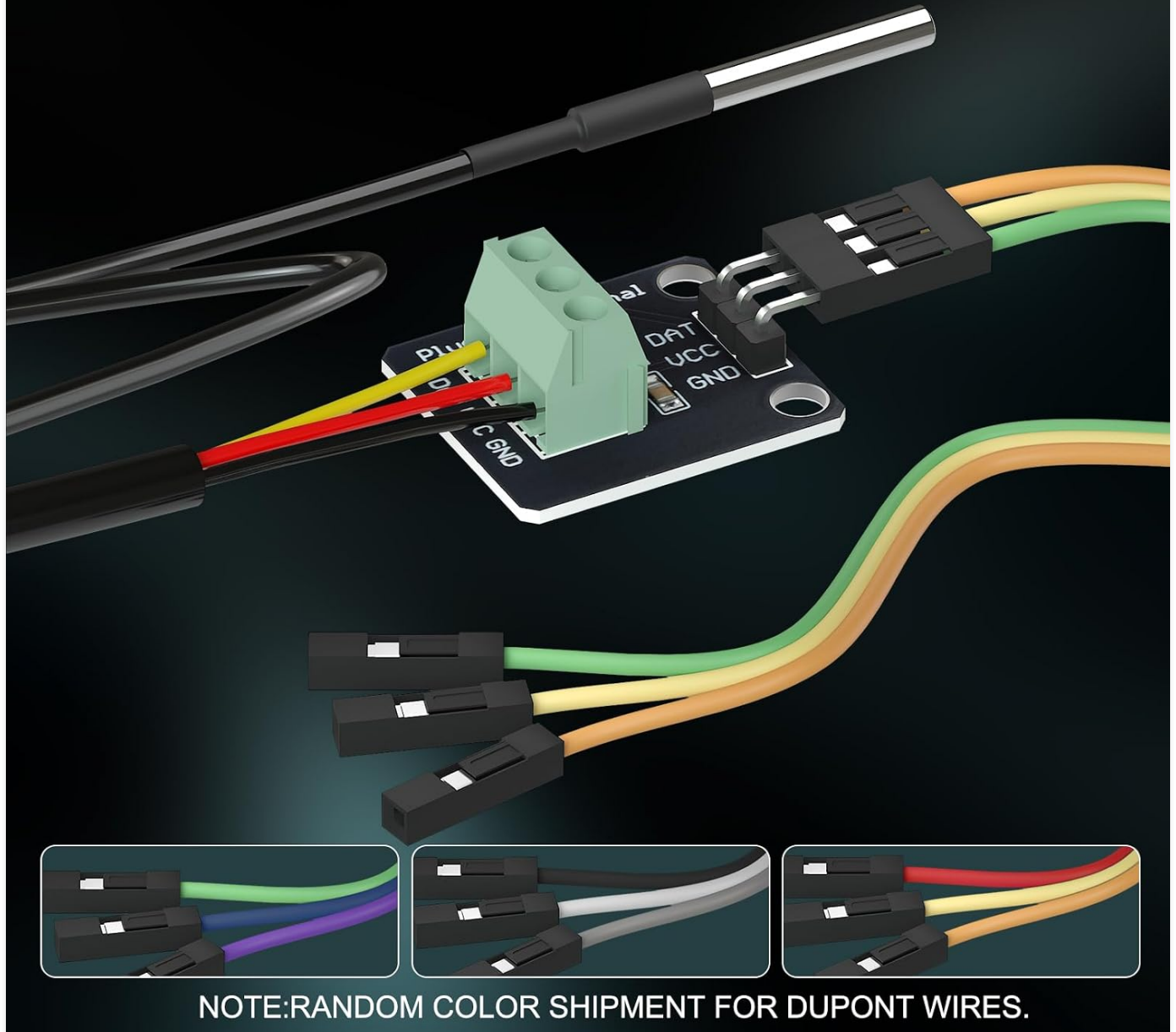
SETUP INSTRUCTIONS

Component Identification

The kit includes the DS18B20 temperature probe with three wires (Red, Yellow, Black), a probe adapter board, 3-pin female-to-female Dupont wires, and 4.7k ohm resistors.

Wiring Diagram

WIRING DIAGRAM



NOTE:RANDOM COLOR SHIPMENT FOR DUPONT WIRES.

Figure 6: Wiring connections for the DS18B20 probe to the adapter board and microcontroller.

Follow these steps to connect the DS18B20 temperature sensor:

1. Connect the **Red** wire from the DS18B20 probe to the **VCC** pin on the adapter board. This supplies power to the sensor.
2. Connect the **Black** wire from the DS18B20 probe to the **GND** pin on the adapter board. This is the ground connection.
3. Connect the **Yellow** wire from the DS18B20 probe to the **DATA** pin on the adapter board. This is the 1-Wire communication line.
4. If using with a Raspberry Pi, the adapter board has an integrated pull-up resistor, allowing direct connection to the GPIO pins.
5. For optimal stability, especially with other microcontrollers like Arduino, it is recommended to place a **4.7K ohm resistor** between the **DATA (Yellow)** and **VCC (Red)** lines. This acts as a pull-up resistor for the 1-Wire bus.
6. Use the provided female-to-female Dupont wires to connect the adapter board to your microcontroller (e.g., Arduino, Raspberry Pi). Ensure VCC, GND, and DATA pins are correctly matched.

1-Wire Protocol

The DS18B20 sensor communicates using the 1-Wire protocol, which requires only one data line (plus power and ground) for communication. This simplifies wiring and allows multiple sensors to be connected to a single data pin on a microcontroller (parasite power mode is also possible but not covered here).

Voltage Requirements

The sensor operates within a voltage range of 3.0V to 5.5V. Ensure your microcontroller's power supply to the sensor falls within this range.

Software Integration

To read temperature data, you will need to implement the 1-Wire protocol in your microcontroller's code. Libraries are widely available for popular platforms:

- **Arduino:** Use the OneWire and DallasTemperature libraries.
- **Raspberry Pi:** Enable the 1-Wire interface in the Raspberry Pi configuration and use Python libraries like `w1thermsensor`.`

Refer to the specific documentation and examples for your chosen microcontroller and programming language for detailed coding instructions.



Figure 7: Examples of wide applications for the DS18B20 sensor, including industrial, agricultural, and daily use scenarios.

MAINTENANCE

The DROK DS18B20 temperature sensor probes are designed for durability and require minimal maintenance. However, following these guidelines can help ensure optimal performance and extend product life:

- **Cleaning:** If the stainless steel probe becomes dirty, gently wipe it with a soft, damp cloth. Avoid abrasive cleaners or solvents that could damage the probe's surface or sealant.
- **Inspection:** Periodically inspect the probe cable and connections for any signs of wear, damage, or corrosion. Ensure the heat shrink tubing on the wires remains intact.
- **Storage:** When not in use, store the probes and components in a dry, clean environment, away from extreme temperatures and direct sunlight.
- **Handling:** While the probe is robust, avoid excessive bending or pulling of the cable, which could compromise the internal wiring or waterproof seal.

TROUBLESHOOTING

If you encounter issues with your DS18B20 temperature sensor, consider the following troubleshooting steps:

- **No Temperature Readings:**

- Verify all wiring connections (VCC, GND, DATA) are secure and correct.
- Ensure the sensor is receiving adequate power (3.0V-5.5V).
- Check your microcontroller's code for proper 1-Wire initialization and sensor address detection.
- Confirm the 4.7K pull-up resistor is correctly installed between DATA and VCC, especially if not using the adapter board's integrated resistor or if experiencing communication issues.

- **Inaccurate Temperature Readings:**

- Ensure the sensor is not exposed to external heat sources or drafts that could affect readings.
- Check for electrical noise on the data line; using shielded cables or shortening wire lengths can help.
- Verify the sensor's resolution setting in your code (9-12 bits). Higher resolution takes longer but provides more precise readings.

- **Sensor Not Detected:**

- Double-check the 1-Wire bus connection.
- Ensure the 1-Wire protocol is correctly enabled on your Raspberry Pi or that the OneWire library is properly included in Arduino.
- If multiple sensors are on the same bus, ensure unique addresses are being scanned for.

WARRANTY AND SUPPORT

Warranty Information

DROK products are covered by a one-year warranty from the date of purchase. In the event of any quality issues with your item during this period, a brand new replacement can be provided. This warranty covers manufacturing defects and ensures product functionality under normal use.

Customer Support

For technical assistance, troubleshooting guidance, or warranty claims, please contact DROK customer support. Our team is dedicated to providing prompt and helpful solutions to ensure your satisfaction.

Please refer to the contact information provided with your purchase or visit the official DROK website for support details.

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question