**TFmini-Lidar-with-RaspberryPi-5**

**Hardware Setup**

**Components Needed:**

1. **Raspberry Pi 5** (with Raspbian OS installed)
2. **TFmini-S Micro LiDAR Distance Sensor**
3. **Jumper Wires** (Female-to-Female or Female-to-Male, depending on your sensor's connector)
4. **Breadboard** (optional, for easier connections)
5. **Power Supply** for Raspberry Pi 5

**Connections:**

The TFmini-S LiDAR sensor communicates via a serial interface (UART). Here's how to connect it to the Raspberry Pi 5:

| **TFmini-S Pin** | **Raspberry Pi 5 GPIO Pin** |
| --- | --- |
| **VCC** | 5V (Pin 2 or 4) |
| **GND** | GND (Pin 6 or 9) |
| **TX** | RX (GPIO 15, Pin 10) |
| **RX** | TX (GPIO 14, Pin 8) |

**Note:** The TFmini-S TX pin connects to the Raspberry Pi RX pin, and vice versa.

**Software Setup**

**Step 1: Enable Serial Interface on Raspberry Pi**

1. Open the terminal on your Raspberry Pi.
2. Run the following command to open the Raspberry Pi configuration tool:

sudo raspi-config

1. Navigate to **Interface Options** > **Serial Port**.
2. Disable the login shell over serial and enable the serial port hardware.
3. Reboot the Raspberry Pi:

sudo reboot

**Step 2: Install Required Libraries**

1. Update your Raspberry Pi:

sudo apt update

sudo apt upgrade

1. Install the python3-serial library:

sudo apt install python3-serial

**Step 3: Write Python Script to Read Data from TFmini-S**

Create a Python script to read distance data from the LiDAR sensor.

1. Open a text editor (e.g., Nano) and create a new Python file:

nano lidar\_distance.py

1. Paste the following code into the file:

**Python**

import serial

import time

# Open serial connection for TFmini-S

ser = serial.Serial("/dev/ttyAMA0", 115200, timeout=1)

while True:

count = ser.in\_waiting # Check if data is available

if count > 8:

recv = ser.read(9) # Read 9 bytes

if recv[0] == 0x59 and recv[1] == 0x59: # Check header bytes

distance = recv[2] + recv[3] \* 256 # Calculate distance

print(f"Distance: {distance} cm")

time.sleep(0.01)

1. Save the file (Ctrl+O) and exit the editor (Ctrl+X).

**Step 4: Run the Python Script**

1. Run the script:

python3 lidar\_distance.py

1. The script will start printing the distance (in centimeters) and signal strength to the terminal.