

Step 1: Physical Setup - Mounting the Thermocouple

1. For the temperature reading, you'll need to mount the K Type thermocouple in your desired location. This often involves drilling a hole and tapping it to match the M6 threading on the thermocouple.
2. Mark the location where you want to install the thermocouple. Make sure that the chosen location is safe for drilling, and will not interfere with other elements or components (like HVAC coils).
3. Drill a hole in the marked location using an appropriate drill bit.
4. Use an M6 tap to thread the hole. Carefully turn the tap to create clean threads.
5. Screw the thermocouple into the newly created hole, ensuring good contact for accurate temperature readings.
6. Connect the red lead to the + connection and the blue lead to the - terminal

Step 2: Wiring & Powering the Device

Depending on your application, the D1MiniDev can be powered via USB or by a 12V power supply.

Powering via USB

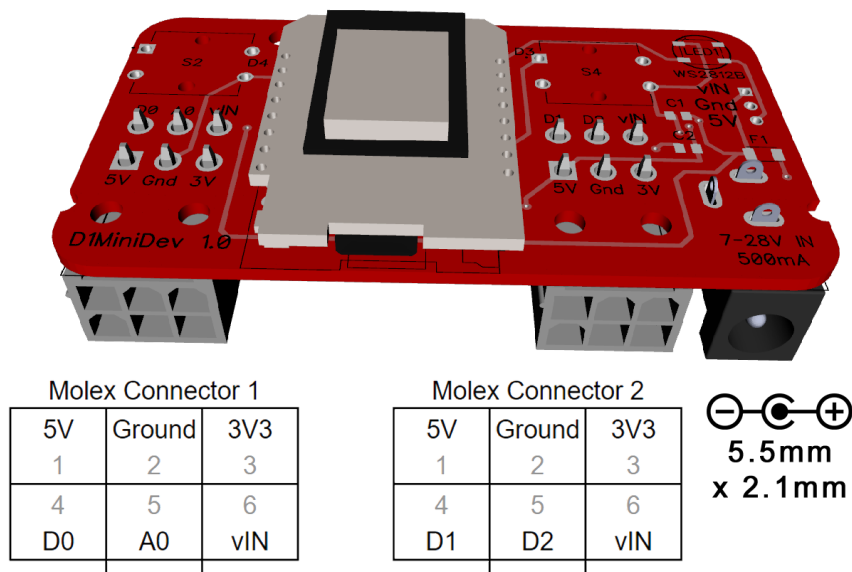
Connect the D1MiniDev to your power source using a standard USB cable. Ensure the USB power source is capable of supplying at least 500mA.

Powering via 12V - Models with DC-DC Converter installed only

1. Use a 12V DC Power supply with a 5MM barrel plug on it. The power supply should be rated for 750mA or greater. The center pin should be positive.
2. Connect the power supply to the D1MiniDev via the 5.5mm x 2.1mm barrel jack.

Daisy Chain Power Configuration

For Daisy-Chain applications the 6-pin Molex Minifit connectors can be used to power 1 device from another device. Both devices must have a DC-DC Converter installed. It is recommended to use at least a 1A power. **Use only the 12V and ground pins to supply power to a second device.**



Step 3: ESPHome Setup

ESPHome is a system to control your ESP8266/ESP32 modules with simple yet powerful configuration files. It's fully integrated with Home Assistant.

1. Open the Home Assistant Dashboard, navigate to the "Supervisor" tab, and then "Add-on Store".
2. Install the ESPHome add-on.
3. In the ESPHome dashboard, click on the "+" button to add a new device.
4. Choose "Generic ESP8266" when asked for the device type.
5. Fill in the Wi-Fi SSID and password, and choose a suitable name for the device.
6. Once the device is online, open its configuration by clicking on "EDIT".
7. Replace the configuration with the provided D1MiniDev.yaml from the root directory of the GitHub repository.
Don't forget to keep the Wi-Fi settings, OTA password, and API key generated by ESPHome for your particular installation.
8. Delete any sections that are not relevant to sensors you're using. For instance if you do not have push buttons installed you can delete the binary sensor section.
9. You should now have a notification that a new device has been found. Follow the steps to set up this new device.
10. After completing these steps, your device should be ready for use, with the ability to monitor temperatures using the thermocouple and control the WS2812B RGB LED via Home Assistant.

Step 4: 3D Printed Enclosure

The 3D Printed enclosure can be found on the main github repository. For assembly you'll need the following:

- M3 x 30mm Flat Head Socket Bolts x2
- M3 Hex Nuts x2

Feel free to explore further possibilities of the device, such as setting up automations, customizing the LED behavior, or adding more devices to your smart home system.

Disclaimer

Please note, this guide is provided for informational purposes only. All users are encouraged to independently validate their configurations according to their specific use cases and system requirements. While I strive to provide helpful and accurate information, I make no warranties or representations of any kind about the completeness, accuracy, or reliability of the information contained in this guide.

The suggested setups and configurations in this guide are based on my experience and testing, but I cannot guarantee that these will work in every environment or with every possible combination of hardware and software.

I strongly recommend referring to the official ESPHome documentation for a thorough understanding of how to use and configure ESPHome. This will give you the most accurate and up-to-date information regarding the installation, setup, and customization of your ESPHome devices. Visit ESPHome's official website for comprehensive and reliable guidance.

By using this guide, you agree that I am not responsible for any damage or loss caused by the use of the information contained in this guide. Always exercise safety precautions when working with electronics and follow all local, state, and national electrical codes.

Remember, the strength of the DIY community lies in sharing experiences, troubleshooting, and learning together. Enjoy your D1MiniDev journey!