

LiebeWH LiebeWHetmiv7xgab

LiebeWH O3 Gas Sensor Module Instruction Manual

Model: LiebeWHetmiv7xgab

1. INTRODUCTION

This instruction manual provides essential information for the proper setup, operation, and maintenance of your LiebeWH O3 Gas Sensor Module. This module is designed for detecting ozone (O3) gas concentrations, offering both digital (TTL) and analog outputs for integration into various air quality monitoring and hazardous gas detection systems. Please read this manual thoroughly before using the product to ensure safe and efficient operation.

2. PRODUCT OVERVIEW

The LiebeWH O3 Gas Sensor Module is a compact and efficient solution for ozone gas detection. It features a robust design and provides reliable concentration readings.

Key Features:

- **Dual Output:** Provides both TTL digital switching output (0 and 1) and an analog output (AO) whose voltage levels change with gas concentration.
- **Rapid Response:** Designed for a short response time, enabling quick and stable detection of gas concentrations.
- **Integrated Indicators:** Features a double panel design with a power indicator and a TTL output indicator for easy status monitoring.
- **Simple Integration:** Its straightforward structure allows for use in various environments and applications.

Module Components:



Figure 1: Top view of the LiebeWH O3 Gas Sensor Module, showing the sensor element and PCB.

The module consists of an O3 gas sensor element mounted on a printed circuit board (PCB). It includes a potentiometer for sensitivity adjustment, power input pins, and output pins for digital and analog signals.

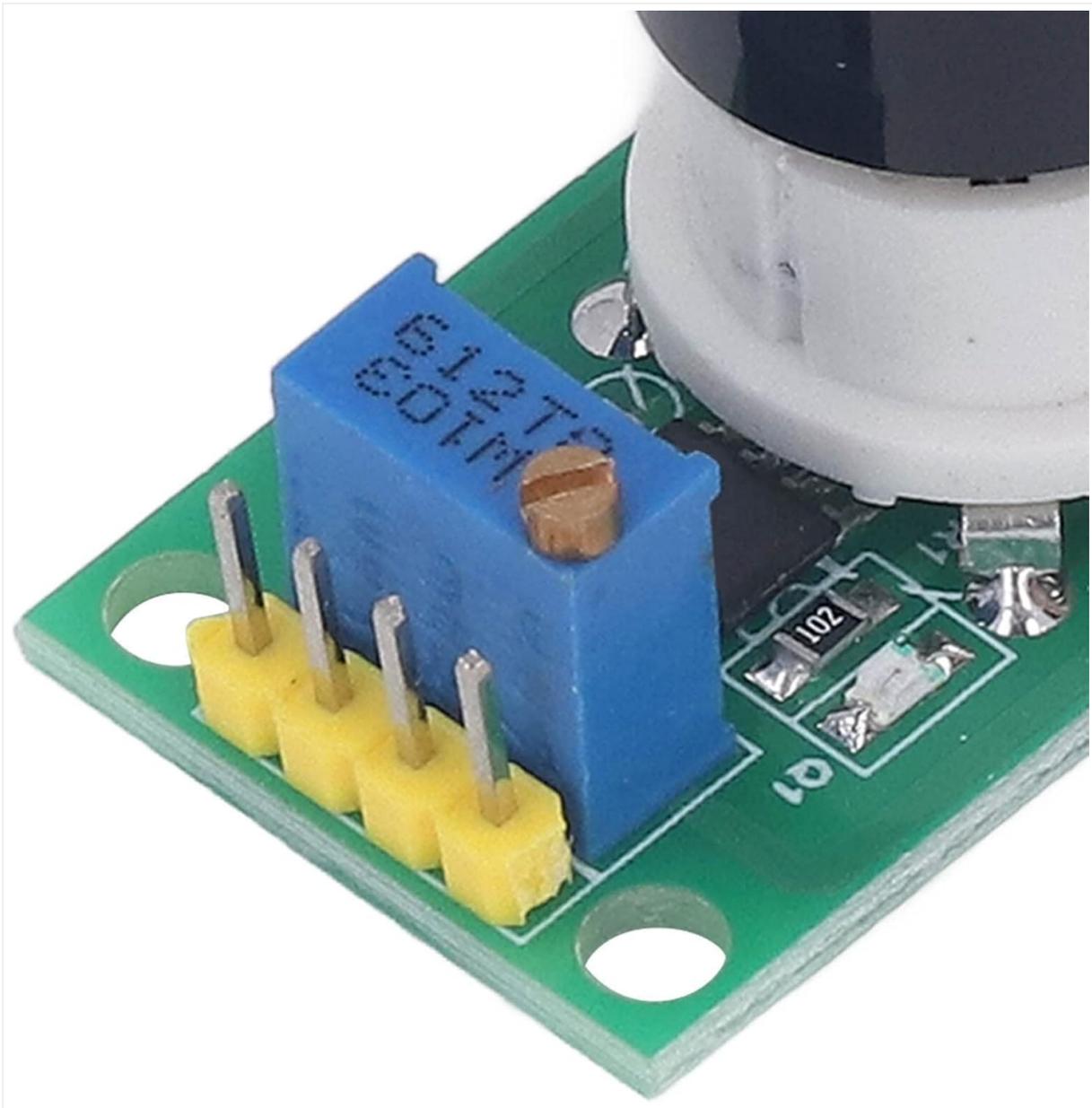


Figure 2: Close-up view of the module's connection pins and the blue potentiometer for adjustment.

The connection pins are clearly labeled for VCC (power), GND (ground), DO (digital output), and AO (analog output). The blue component with a screw is a potentiometer used to adjust the threshold for the digital output.

3. SPECIFICATIONS

Parameter	Value
Input Voltage	DC 5V (Maximum 24V)
Power Consumption (Current)	150mA
DO Output	TTL digital 0 and 1 (0.1V and 5V)
AO Output	Analog levels
Operating Temperature	-10 to 50°C (Nominal Temperature 20°C)
Operating Humidity	≤ 95% (Nominal humidity 65%)
Material	PCB, ABS

Parameter	Value
Item Weight	0.317 ounces
Package Dimensions	4.41 x 2.64 x 0.94 inches

4. SETUP AND WIRING

Proper wiring is crucial for the correct functioning of the O3 Gas Sensor Module. Follow the instructions below carefully.

Wiring Method:

1. **VCC:** Connect to the positive terminal of your power supply (typically 5V). The module supports a maximum input of 24V.
2. **GND:** Connect to the negative terminal (ground) of your power supply.
3. **DO (Digital Output):** This pin provides a TTL switch output. It will output a high (5V) or low (0.1V) signal based on whether the detected gas concentration exceeds the set threshold.
4. **AO (Analog Output):** This pin provides an analog voltage output that varies proportionally with the detected gas concentration. This allows for more granular measurement.



5. OPERATING INSTRUCTIONS

Once the module is correctly wired, follow these steps for operation:

1. **Power On:** Apply power to the VCC and GND pins. The power indicator LED on the module should illuminate.
2. **Warm-up Period:** After powering on, the sensor requires approximately 20 seconds to warm up. During this period, the measured data may not be stable. The sensor heating is a normal part of its operation due to an internal electric heating wire. If the module feels excessively hot, it may indicate an issue.
3. **Digital Output (DO):** The DO pin will provide a high (5V) signal when the detected O₃ concentration exceeds a preset threshold, and a low (0.1V) signal otherwise. This threshold can be adjusted using the onboard potentiometer.
4. **Analog Output (AO):** The AO pin will output a continuous analog voltage signal. This voltage level will change in proportion to the O₃ gas concentration detected. Connect this output to an Analog-to-Digital Converter (ADC) on a microcontroller (e.g., Arduino, Raspberry Pi) for precise concentration readings.
5. **Threshold Adjustment:** Use a small screwdriver to carefully turn the potentiometer (blue component) to adjust the sensitivity and the switching threshold for the digital output. Turn clockwise to increase sensitivity (lower threshold), and counter-clockwise to decrease sensitivity (higher threshold).

6. MAINTENANCE AND PRECAUTIONS

To ensure the longevity and accuracy of your O₃ Gas Sensor Module, observe the following maintenance guidelines and precautions:

- **Environmental Conditions:** Avoid long-term exposure to harsh environments. This includes high humidity, high temperatures, and areas with high pollution. Such conditions can severely affect the sensor's performance and lifespan, regardless of whether it is powered on or off.
- **Cleaning:** Keep the sensor element clean and free from dust or debris. Do not use liquid cleaners directly on the sensor. If cleaning is necessary, use a soft, dry brush or compressed air carefully.
- **Handling:** Handle the module with care to prevent physical damage to the sensor element or PCB components. Avoid touching the sensor element directly.
- **Power Supply:** Ensure a stable power supply within the specified voltage range (DC 5V, max 24V). Unstable power can lead to inaccurate readings or damage.

7. TROUBLESHOOTING

If you encounter issues with your O₃ Gas Sensor Module, consider the following troubleshooting steps:

- **No Power Indicator:**
 - Check power supply connections (VCC and GND) for correct polarity and secure contact.
 - Verify that the power supply is providing the correct voltage (5V recommended).
- **Unstable Readings / No Output:**
 - Ensure the sensor has completed its 20-second warm-up period after power-on.
 - Check all wiring connections for looseness or incorrect placement.
 - Verify that the environment is not subject to extreme conditions (high humidity, temperature, or pollution) that could affect sensor performance.
 - For analog output, ensure your ADC is correctly configured and calibrated.

- For digital output, try adjusting the potentiometer to see if the threshold is set too high or too low for the current gas concentration.

- **Module Feels Excessively Hot:**

- While some warmth is normal during operation, excessive heat may indicate a fault. Disconnect power immediately and re-check wiring and input voltage.

8. SAFETY INFORMATION

This device is intended for gas detection and monitoring. It is not a life-safety device and should not be relied upon as the sole means of protection against hazardous gas levels. Always ensure proper ventilation and follow all relevant safety protocols when working with gases or in environments where hazardous gases may be present.

- Do not modify the module.
- Keep out of reach of children.
- Use only with specified power supply voltages.
- Dispose of electronic waste responsibly according to local regulations.

9. SUPPORT

For further assistance or inquiries, please visit the official LiebeWH store or contact customer support.

LiebeWH Store: <https://www.amazon.com/stores/LiebeWH/page/430FE964-6B92-46A4-9493-1D1C7A7FB131>

Documents - LiebeWH – LiebeWHetmiv7xgab
no relevant documents