AMONIDA TB446 SHT30

AMONIDA TB446 SHT30 Temperature Humidity Sensor

INSTRUCTION MANUAL

1. PRODUCT OVERVIEW

The AMONIDA TB446 SHT30 is a high-precision digital temperature and humidity sensor module designed for various applications requiring accurate environmental monitoring. It features a real I2C interface for communication and provides fully calibrated, linearized, and temperature-compensated digital output. This sensor is compatible with both 3V and 5V microcontrollers, making it versatile for integration into different systems. It offers a wide measurement range for both temperature and humidity, ensuring reliable data collection.

Figure 1: Two AMONIDA SHT30 Temperature Humidity Sensor modules with their respective connecting cables, illustrating the compact design and wiring.

2. KEY FEATURES

- **Digital Output:** Provides fully calibrated, linearized, and temperature-compensated digital signals.
- **I2C Interface:** Real I2C communication with speeds up to 1MHz.
- **Wide Voltage Compatibility:** Operates with 2.5V to 5.5V DC power supply.
- **Temperature Range:** Measures from -40°C to 125°C (operational environment -40°C to 80°C due to cable/shell limitations).
- **Humidity Range:** Measures 0% to 100% Relative Humidity (RH).
- **High Accuracy:** ±0.2°C for temperature, ±2% RH for humidity.
- **Standard Connector:** XH2.54 4P terminal for easy connection.

Figure 2: The SHT30 sensor module shown against a circuit board background, emphasizing its digital output capabilities with calibration, linearization, and temperature compensation.

3. SETUP AND CONNECTION

Follow these steps to properly connect your AMONIDA TB446 SHT30 sensor:

1. **Identify Connections:** The sensor uses an XH2.54 4P terminal. The wires are typically color-coded for easy identification:

   - **Red:** VCC (Power Supply, 2.5V-5.5V DC)
   - **Black:** GND (Ground)
   - **Yellow:** SDA (I2C Data Line)
   - **White:** SCL (I2C Clock Line)

2. **Connect Power:** Connect the Red wire to your microcontroller's 2.5V-5.5V DC power output and the Black wire to the microcontroller's Ground (GND).

3. **Connect I2C Interface:** Connect the Yellow wire (SDA) to your microcontroller's I2C Data pin and the White wire (SCL) to your microcontroller's I2C Clock pin. Ensure your microcontroller's I2C pins are properly configured.

4. **Secure Connections:** Ensure all connections are firm and correctly aligned to prevent short circuits or improper data transmission.

The I2C address for the SHT30 sensor is 0x44.

4. OPERATING INSTRUCTIONS

Once connected, the SHT30 sensor communicates via the I2C protocol. You will need to write code for your microcontroller (e.g., Arduino, Raspberry Pi) to interact with the sensor.

1. **Initialize I2C:** In your code, initialize the I2C communication bus on your microcontroller.

2. **Send Measurement Commands:** Send appropriate I2C commands to the sensor to initiate a temperature and humidity measurement. Refer to the SHT30 datasheet for specific command details (e.g., single shot measurement, periodic measurement).

3. **Read Data:** After a measurement is complete, read the digital output data from the sensor via the I2C bus. The sensor will provide raw digital values for temperature and humidity.

4. **Convert Data:** Convert the raw digital values into meaningful temperature (°C or °F) and humidity (%RH) readings using the conversion formulas provided in the SHT30 datasheet. Many libraries for common microcontrollers handle this conversion automatically.

5. MAINTENANCE

The AMONIDA TB446 SHT30 sensor is designed for reliable operation with minimal maintenance. Observe the following guidelines:

- **Environmental Conditions:** While the sensor itself can measure up to 125°C, the external shell and connecting wires are rated for -40°C to 80°C. Ensure the sensor is operated within this environmental temperature range to prevent damage to the housing or cables.
- **Cleanliness:** Keep the sensor clean and free from dust, dirt, or moisture accumulation on the sensing element, as this can affect accuracy. Use a soft, dry cloth for cleaning if necessary. Avoid using liquids or abrasive materials.
- **Physical Protection:** Protect the sensor from physical impact or excessive mechanical stress.
- **Storage:** When not in use, store the sensor in a dry, non-condensing environment within its specified temperature range.

6. TROUBLESHOOTING

If you encounter issues with your SHT30 sensor, consider the following troubleshooting steps:

- **No Readings or Incorrect Readings:**

  - **Check Wiring:** Verify that all connections (VCC, GND, SDA, SCL) are correctly made and secure.
  - **Power Supply:** Ensure the sensor is receiving adequate power (2.5V-5.5V DC).
  - **I2C Address:** Confirm that the I2C address (0x44) in your code matches the sensor's address.
  - **I2C Pull-ups:** Ensure your I2C bus has appropriate pull-up resistors (typically 4.7kΩ) on SDA and SCL lines, if not already provided by your microcontroller board.
  - **Code Logic:** Review your microcontroller code for correct I2C initialization, command sending, and data reading/conversion.
  - **Environmental Limits:** Check if the sensor is operating outside its specified environmental temperature or humidity range, which can affect performance.

- **Intermittent Readings:**

  - **Loose Connections:** Re-check all wiring for any loose contacts.
  - **Noise:** Ensure the sensor and its wiring are shielded from excessive electrical noise, especially in industrial environments.

7. SPECIFICATIONS

Figure 4: The SHT30 sensor module with its connecting cable, illustrating the approximate cable length of 36 cm (14.2 inches).

Parameter	Value
Model	TB446 SHT30
Working Voltage	2.5V - 5.5V DC
Output Type	IIC Digital Signal
Output Interface	XH2.54 4P Terminal
Temperature Measurement Range	-40°C to 125°C
Recommended Operating Temperature (due to shell/line)	-40°C to 80°C
Humidity Measurement Range	0% to 100% RH
Temperature Accuracy	±0.2°C
Humidity Accuracy	±2% RH
IIC Address	0x44

Parameter	Value
Cable Length	Approx. 36 cm (14.2 inches)

8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the documentation provided with your purchase or contact AMONIDA customer service. Keep your purchase receipt for warranty claims.

Related Documents - TB446 SHT30

	[Sensirion SHT3x-DIS Humidity and Temperature Sensor Data Sheet](#) Detailed technical data sheet for the Sensirion SHT3x-DIS, a next-generation digital humidity and temperature sensor with high accuracy, I2C interface, and wide supply voltage range. Includes specifications, performance, and operational details.
	[Solar Powered WiFi Weather Station V4.0: Build Your Own IoT Device](#) A detailed guide to building a solar-powered, wireless weather station using ESP32 and LoRa modules. Learn to integrate sensors, optimize power, and monitor environmental data remotely. Ideal for DIY electronics enthusiasts and IoT projects.
	[Sensirion Humidity and Temperature Sensors RoHS, REACH, and Hal-Free Declaration](#) Declaration by Sensirion AG confirming that their Humidity and Temperature Sensors comply with RoHS, REACH, and Hal-Free regulations, listing specific product models and their compliance status.