SenseBus_TH

A Temperature and Humidity Sensor with Modbus RTU Communication

A Temperature & Humidity sensor is a device that detects and measures changes in temperature and humidity, converting the data into an electrical signal for monitoring or control purposes. **SilTech**'s IIOT Sensor, **"SenseBus_TH"** is designed for industrial use, offering precise and reliable temperature and humidity measurements. It operates on the Modbus RTU communication protocol, enabling easy integration into automation systems and SCADA networks. The sensor measures ambient temperature and humidity and transmits real-time data with a resolution of $\Delta T = \pm 0.2$ °C, $\Delta RH = \pm 1.8$ %RH. Its rugged housing ensures durability in harsh environments, making it ideal for HVAC systems, process control, and environmental monitoring. With Modbus RTU support, the sensor provides accurate and efficient temperature data over long distances, making it a versatile solution for both small and largescale applications.

Key Features:

- **Accurate Measurement**: Provides precise temperature and humidity readings with a resolution of $\Delta T = \pm 0.2$ °C, $\Delta RH = \pm 1.8$ %RH respectively.
- **Real-time Data Transmission**: Transmits live temperature data over Modbus RTU to ensure up-to-date information for monitoring and control.
- **Wide Power and Measurement Range**: 5-24v DC Power input and measures temperatures from -40°C to 125°C, making it suitable for a variety of applications.
- **Modbus RTU Communication**: Fully compatible with Modbus RTU protocol for seamless integration into SCADA and automation systems.
- **Multiple Register Support**: Supports multiple Modbus Input and Holding Registers, offering flexible data access for different system configurations.
- **Configurable Communication parameters**: Allows customization of communication parameters like baud rate, device id etc. for optimal performance in different networks with multiple devices.
- **Rugged and Durable**: Designed with industrial-grade materials to withstand harsh environments, including dust, moisture, and extreme temperatures.
- **Low Power Consumption**: Optimized for energy efficiency, ensuring long-term operation with minimal power requirements.
- **Easy Installation**: Compact design with standardized DIN mounting and Wall mounting options allows for quick and simple installation.

Applications:

- HVAC Systems
- Cold Storages
- Large scale chillers
- Green Houses Monitoring
- Building Management Systems
- Energy Management Systems
- Industrial Automation
- Industry 4.0 Monitoring

Technical Specifications:

- **Sensor Type:** Sensirion SHT40 (Digital)

- **Temperature Range:** -40°C to 125°C

- **Temperature Accuracy:** $\Delta T = \pm 0.2$ °C

- **Humidity range:** 0 – 95 %RH

- **Humidity Accuracy:** $\Delta RH = \pm 1.8$ %RH

- **Power Supply:** 5-24V DC

- **Current Consumption:** < 10mA at 24V DC

- **Communication Protocol:** Modbus RTU

- **Baud Rate:** Selectable from 2400/4800/9600/115200

- **Input Registers:** 16-bit input registers for temperature, humidity, unique ID etc. data

- **Holding Registers:** Configurable data- Modbus Baud rate, Slave ID etc.

- **Response Time:** < 5 second

- **Housing Material:** ABS plastic

- **Dimensions:** 65mm x 46mm x 29mm (L x W x H)

- **Operating Temperature Humidity:** -40°C to 125°C, 0-95% RH non-condensing

- **Mounting:** Standard DIN Rail, Wall or panel mountable

- **Terminal:** Pluggable Screw Terminal - Clamp Cage Type

Communication Protocol:

- ### Serial Communication Parameters:

Table 1: Serial Communication Parameters

Data Bit	8 bit
Data Parity	None
Stop bit	1 bit
Data Verification	CRC(Redundant cyclic codes)
Baud Rate	2400bit/s, 4800bit/s, 9600bit/s, 115200bit/s (Selectable)

- ### Modbus Parameters:

This Device supports - Modbus RTU (Remote terminal Unit) Communication Protocol over RS485 line.
The Device supports - Function code 04 (Read Input Registers) to Read Data.
Function code 06 (Write Single Register) to Write Data.

Table 2: Modbus Parameters

Modbus Function Code	Parameter	Address (Decimal)	Data Type	Description
04 Read Input Registers	Temperature	01	Float	Read Temperature
	Humidity	02	Float	Read Humidity
	Unique ID (LSB)	03	Integer 32bit	Read Device Unique ID
	Unique ID (MSB)	04		
	Modbus Salve ID	05	Integer	1-255 (Default 1)
	Baud Rate	06	Integer	1- 2400 2- 4800 3- 9600 4- 115200 (Default 3- 9600)
	Reserved	07, 08, 09, 10		Reserved for future Development
06 Write Single Register	Baud Rate	01	Integer	1- 2400 2- 4800 3- 9600 4- 115200
	Slave ID	02	Integer	1-255
	Reserved	03, 04, 05, 06, 07, 08, 09, 10		Reserved for future Development

- ### Default Parameters:

Slave ID - 1
Baud Rate - 9600
Data Bit - 8
Parity – NONE
Stop Bit - 1

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Warranty and Support:

- **Warranty**: 1-year limited warranty from the date of purchase.
- For any technical support, reach us at support@siltech.in.

Certifications and Compliance:

- CE Certified
- RoHS Compliant
- FCC Compliant

Maintenance and Care:

- Clean the sensor periodically to avoid dust build up.
- Avoid prolonged exposure to corrosive environments.

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