

Temperature and Humidity Sensor - Product Code



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Temperature

WIN-PR-AHT21-M

WIN-SN-AHT21-M is a compact, high-precision temperature and humidity sensor designed for applications requiring low power consumption and small form factor. With an accuracy of $\pm 0.3^{\circ}\text{C}$ for temperature and $\pm 2\%$ for humidity, it ensures reliable measurements over a wide range. Its RS485 communication interface simplifies integration into small, embedded systems, making it ideal for IoT, HVAC, and wearable devices. The sensor's long-term stability ensures consistent performance in harsh environments, making it a cost-effective solution for long-term deployment.

Sensors Parameters

Measuring Parameter	Measuring Range	Operating Temperature	Measuring Accuracy
Temperature	-40°C ~ 120°C.	-40°C ~ 120°C.	0.3°C
Humidity	0~100% RH.	-40°C ~ 120°C.	2.0 %RH

Interface Definition

Pin	Name	Color	Description
1	VDD	Red	Power Supply (5V)
2	RS485 A+	White	RS485 A
3	RS485 B-	Green	RS485 B
4	GND	Black	Ground

Sensor Communications

1. Start the Sensor: The first step is to power up the sensor with the supply voltage (5V). After power-on, the sensor needs >100ms time to reach the idle state and it is ready to receive commands sent by the host.
2. Initially the Baud rate is 9600 and slave ID is 1. And we can change SlaveID if required.

Configuration Setting

Communication Speed - 9600

Data Bits - 8

Parity - None

Stop bit - 1

CRC - Yes

Function code - 0X03 (Read Holding Register)

Recommended Cable Electrical Characteristics

22 AWG Cable - Shielded and twisted pair should be used.

Tinned Copper - Recommended

Nominal Conductor DCR - 14.7 ohm / 1000 ft

Nominal Capacitance - 11 pf / feet (conductor to conductor)

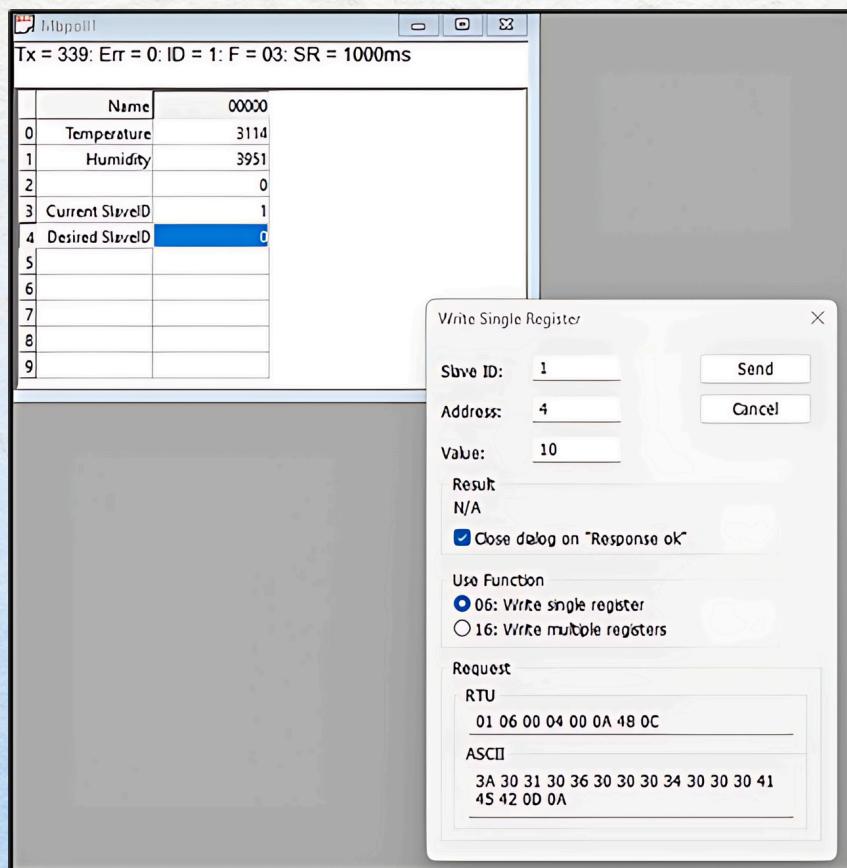
High Frequency Non-Insertion Loss - 0.5db / 100ft

Fig 1

The screenshot shows a software window titled "Mbpoll1". At the top, a status bar displays: Tx = 271: Err = 0: ID = 1: F = 03: SR = 1000ms. Below the status bar is a table with two columns: "Name" and "Value". The table contains the following data:

Name	Value
Temperature	3115
Humidity	3894
Current SlaveID	1
Desired SlaveID	0

Fig1 shows the temperature and humidity data at the register 40000 and 40001. Register address 40003 shows the current slaveID. (Default 1).



At address 40004 enter required SlaveID(0-247). Complete a power cycle(On-Off the product). Slave ID will be changes to required slave ID.

	Name	00000
0	Temperature	3107
1	Humidity	3980
2		0
3	Current SlaveID	10
4	Desired SlaveID	0
5		
6		
7		
8		
9		

In this Fig. you can see the Modbus is connected with Changed ID. That is 10

Important Note:

Temperature and Humidity Data are provided in the multiple of 10, for the sake of higher resolution, you need to divide it by 10 to obtain the actual reading. Example. Temperature $3115/100 = 31.15^{\circ}\text{C}$ and Humidity $3894/100 = 38.94\% \text{ RH}$

Technical Support -

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