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UBIBOT UB-DWT-N1 Dry and Wet Bulb Temperature Sensor

UBIBOT UB-DWT-N1 Dry and Wet Bulb Temperature Sensor User Guide

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UBIBOT UB-DWT-N1 Dry and Wet Bulb Temperature Sensor

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- Power Supply: DC 5-12V
- Measurement Data:
    - Dry Bulb Temperature
    - Wet Bulb Temperature
    - Atmospheric Humidity
    - Atmospheric Pressure
    - Dew Point Temperature
- Working Environment: -40~60°C, 0~80%RH
- Response Time: 1s
- Communication Protocol: RS485 Modbus RTU Protocol
- Baud Rate: 1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s (default), 19200 bit/s

Product Usage Instructions

Installation:

1. Mount the sensor in the desired location using the provided mounting bracket.
2. Ensure the sensor is securely installed to prevent any movement during operation.

Data Retrieval:
To retrieve data from the sensor, follow the Modbus-RTU communication protocol as described below:

Communication Basic Parameters:

- Coding System: 1-bit CRC Check
- Baud Rate: 1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s (default), 19200 bit/s

Data Frame Format:

The Modbus-RTU communication protocol format includes:

- Address code: Default 0xC3
- Function code: Support function codes 0x03 (read-only) and 0x06 (read/write)
- Data area: N bytes of 16-bit data with high byte first
- Error check: 16-bit CRC code

Register Address Definitions:

Address (hex)	Description	Data Length
0x0000	Wet Bulb Temperature (1 byte)	
0x0001	Dew Point Temperature (1 byte)	
0x0002	Dry Bulb Temperature (1 byte)	
0x0003	Air Pressure (1 byte)	
0x0004 – 0x0006	Relative Humidity, Absolute Humidity, Vapor Pressure (1 byte each)	
0x0007	Saturation (1 byte)	
0x0008	Specific Volume (1 byte)	
0x0009 – 0x0064	Specific Enthalpy, Slave Address (1 byte each)	

Frequently Asked Questions (FAQ):

- Q: What is the working voltage range for this sensor?

  A: The sensor works with a DC power supply ranging from 5-12V.
- Q: What communication protocol does the sensor support?

  A: The sensor supports the Modbus-RTU protocol over RS485 communication.
- Q: How can I calculate the wet bulb temperature using this sensor?

  A: The sensor provides the necessary data to calculate the wet bulb temperature based on the measured dry

  bulb temperature, humidity, and atmospheric pressure values.

Introduction

Dry and wet bulb temperature sensor adopts original imported sensor. It has stable measurement data, high precision, strong anti-interference ability and long service life.
It can accurately measure the dry bulb temperature, humidity and atmospheric pressure value, and also can calculate the wet bulb temperature, dew point temperature, relative humidity and other data.

Applications

It is suitable for environmental monitoring, agrometeorology and other monitoring environments.

Features

- Multi-parameter in one, including dry bulb temperature, wet bulb temperature, humidity, atmospheric pressure and more.
- With mounting bracket, easy to install and use.
- Supporting Modbus-RTU protocol
- DC 5-12V wide voltage supply

Specifications

Specification		
Product Model		**UB-DWT-N1**
Power Supply		**DC 5-12V**
Measurement Data	**Dry Bulb Temperature**	**Range: -40~80°C, Accuracy: ±0.2°C (@0~65°C)**
	Wet Bulb Temperature	**Range: -40~80°C, Accuracy: ±0.3°C**
	Atmospheric Humidity	**Range: 0-100%, Accuracy: ±2%RH (@10~90%RH)**
	Atmospheric Pressure	**Range: 26~126kPa, Accuracy: ±50Pa**
	Dew Point Temperature	**Range: -90°C~80°C, Accuracy: ±0.3°C**
Working Environment		**-40~60°C 0%~80%RH**
Response Time		**≤1s**
Communication Protocol		**RS485 Modbus RTU Protocol**
RS485 Address		**0xC3**
Baud Rate		**1200 bit/s,2400 bit/s, 4800 bit/s, 9600 bit/s(default), 19200 bit/s**

Communication protocols

Communication Basic Parameter	
Coding System	8–bit binary
Data Bit	8 bits
Parity Checking Bit	none

Error Checking	CRC Check
Baud Rate	1200 bit/s,2400 bit/s, 4800 bit/s, 9600 bit/s(default), 19200 bit/s

Communication basic parameters

Data Frame Format
The Modbus-RTU communication protocol is used in the following format:

- Initial structure ≥ 4 bytes in time.
- Address code: 1 byte, default 0xC3.
- Function code: 1 byte, support function code 0x03 (read-only) and 0x06 (read/write).
- Data area: N bytes, 16-bit data, high byte comes first.
- Error check: 16-bit CRC code.
- End structure ≥ 4 bytes of time

Request					
Slave Address	Function Code	Register Address	No. of Registers	CRC LSB	CRC MSB
1 byte	1 byte	2 bytes	2 bytes	1 byte	1 byte
Response					
Slave Address	Function Code	No. of Bytes	Content 1	Content 1	…	Content n	CRC
1 byte	1 byte	1 byte	2 bytes	2 bytes	…	2 bytes	2 bytes

Register Address

Register Address				
Address (hex)	Content	Data Length	Function Code	Description of definitions
0x0000	Wet Bulb Temperature	1 byte	03	Signed 16-bit integer data, divided by 10 with one decimal place, in [°C]
0x0001	Dew Point Temperature	1 byte	03	Signed 16-bit integer data, divided by 10 with one decimal place, in [°C]
0x0002	Dry Bulb Temperature	1 byte	03	Signed 16-bit integer data, divided by 10 with one decimal place, in [°C]
0x0003	Air Pressure	1 byte	03	Unsigned 16-bit integer data, divided by 100 with two decimal places, in [kPa]
0x0004	Relative Humidity	1 byte	03	Unsigned 16-bit integer data, divided by 10 with one decimal place, in [0~100%]
0x0005	Absolute Humidity	1 byte	03	Unsigned 16-bit integer data, divided by 100 with two decimal places, in [gwater/kgAIR]
0x0006	Vapor Pressure	1 byte	03	Unsigned 16-bit integer data, actual value, in [kPa]
0x0007	Saturation	1 byte	03	Unsigned 16-bit integer data, divided by 100 with two decimal places, in [-]
0x0008	Specific Volume	1 byte	03	Unsigned 16-bit integer data, divided by 1000 with three decimal places, in [m3/kg]
0x0009	Specific Enthalpy	4 bytes	03	IEEE75 standard 32-bit floating point number, in [J/kg]
0x0064	Slave Address	1 byte	06	1 255 default 195 0xC3

Documents / Resources

 UBIBOT UB-DWT-N1 Dry and Wet Bulb Temperature Sensor [pdf] User Guide
UB-DWT-N1 Dry and Wet Bulb Temperature Sensor, UB-DWT-N1, Dry and Wet Bulb Temperature Sensor, Bulb Temperature Sensor, Temperature Sensor, Sensor

References

- **User Manual**