

# User Guide

## 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

### 1. Communication basic parameters

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

Stop Bit	1 bit
Error Checking	CRC Check
Baud Rate	1200 bit/s, 2400 bit/s, 4800 bit/s, 9600 bit/s (default), 19200 bit/s

## 2. Data Frame Format

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

- Initial structure  $\geq 4$  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  $\geq 4$  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

## 3. 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)