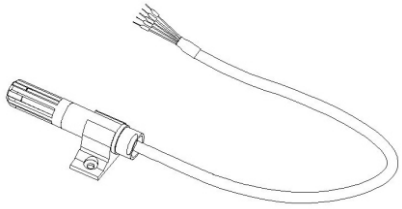
Model: UT-5521P
温湿度变送器
说明书

一、概述

☆ RS485信号输出

☆ 线性响应，温湿度一体

☆ 专用的敏感元件，测量范围宽、精度高



二、主要性能指标

	温度	湿度
测量范围	-20~80℃	0%RH~100%RH
测量精度	≤ ±1℃(-20~80℃),≤ ±0.5℃(25℃)	≤5%RH(25℃,20%RH~80%RH)
信号输出	RS485	
通讯协议	MODBUS	
供电电源	5VDC~24VDC	
工作电流	<10mA	
工作温度	-20~80℃	
储存温度	-40~80℃（非凝结）	
连接方式	冷压端子	
出线长度	3m	

2.1 外形尺寸及安装图（mm）

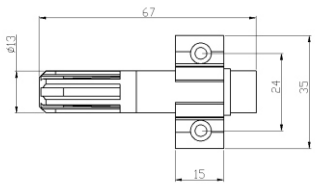


图1

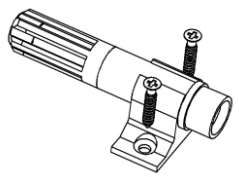


图2

注意事项

安装使用时，注意产品安装方向，同时避免阳光直射或直接接触热源/冷源。避免腐蚀性气体存在。避免在有水、有雾的场所使用。

接线说明

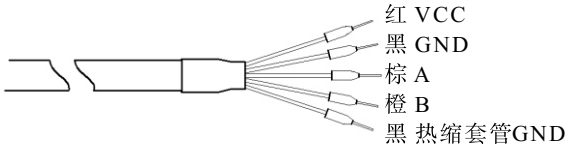


图3

精度与测量范围对应关系

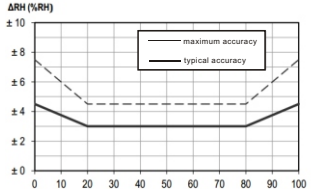


图4

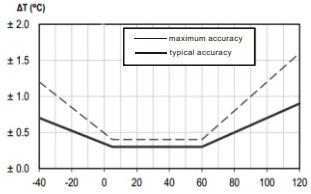


图5

通讯协议

波特率：9600　8位数据位，1位停止位，无校验

主机读操作：

功能	地址	命令	起始地址	读取数量	校验
读温湿度	ADD/00	04	00 00	00 02	CRC(LiHi)
读地址	ADD/00	03	00 00	00 01	CRC(LiHi)
读温度修正值	ADD/00	03	00 02	00 01	CRC(LiHi)
读湿度修正值	ADD/00	03	00 03	00 01	CRC(LiHi)

从机响应

功能	地址	命令	字节长度	内容	校验
读温湿度	ADD/00	04	04	D0 D1 D2 D3①	CRC(LiHi)
读地址	ADD/00	03	02	00 ADD	CRC(LiHi)
读温度修正值	ADD/00	03	02	D0 D1②	CRC(LiHi)
读湿度修正值	ADD/00	03	02	D0 D1③	CRC(LiHi)

主机写操作

功能	地址	命令	起始地址	内容	校验
写地址	ADD/00	06	00 00	00 ADD	CRC(LiHi)
读温度修正值	ADD/00	06	00 02	D0 D1②	CRC(LiHi)
读湿度修正值	ADD/00	06	00 03	D0 D1③	CRC(LiHi)

从机响应

功能	地址	命令	起始地址	内容	校验
写地址	ADD/00	06	00 00	00 ADD	CRC(LiHi)
读温度修正值	ADD/00	06	00 02	D0 D1②	CRC(LiHi)
读湿度修正值	ADD/00	06	00 03	D0 D1③	CRC(LiHi)

CRC校验生成多项式0xA001(1010 0000 0000 0001)

注：① D0D1温度值，无符号定点整型数据。
实际温度 = (D0D1-4000)/100
D2D3湿度值，无符号定点整型数据。
实际湿度 = D2D3/100

② 无符号定点整型数据。D0D1为实际修正值的100倍。
由于设备的自热效应，测量得到温度要比实际温度高，需要在测量结果中减去修正值。

③ 无符号定点整型数据。D0D1为实际修正值的100倍。
受自热影响，测量得到湿度要比实际湿度低，需要在测量结果中加上修正值。

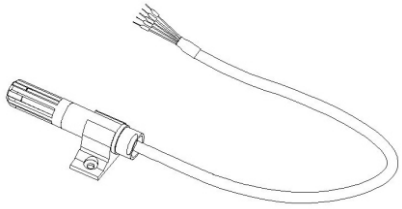
Model: UT-5521P
Temperature & Humidity Sensor
User Manual

Ⅰ.Overview

☆ RS485 signal output

☆ Linear response, temperature and humidity integrated

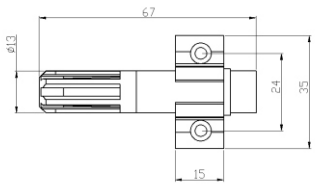
☆Specialized sensor, wide measurement range, high precision

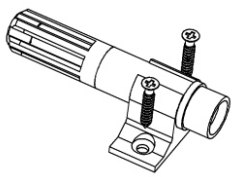


Ⅱ.Features

	Temperature	Humidity
Measurement range	-20~80℃	0%RH~100%RH
Measurement precision	≤ ± 1℃(-20~80℃),≤ ± 0.5℃(25℃)	≤5%RH(25℃,20%RH~80%RH)
Signal output	RS485	
Communication protocol	MODBUS	
Power	5VDC~24VDC	
Operating current	<10mA	
Operating temperature	-20~80℃	
Storage temperature	-40~80℃	
Connection	cold-pressed terminal	
Cable length	3m	

2.1 Dimension(mm)

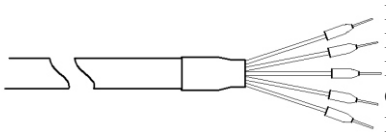




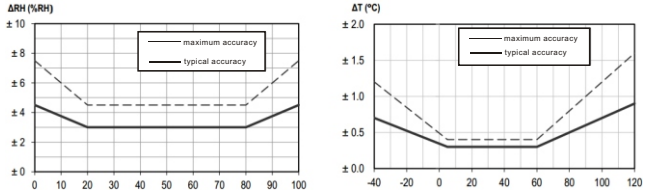
Remarks:

During installation, pleas ensure the install direction of the product; meanwhile please avoid direct sunlight or direct contact heat/cold source, and avoid the corrosive gas, watery, foggy environment.

Connection description



Precision and measurement range relation



Communication protocol

Baudrate: 9600 8-bit digital bit, 1-bit stop bit, without check bit

Host read operation

Function	Address	Command	Initial address	Read qty	Check
Read temperature/ humidity	ADD/00	04	00 00	00 02	CRC(Li Hi)
Read address	ADD/00	03	00 00	00 01	CRC(Li Hi)
Read temperature revised value	ADD/00	03	00 02	00 01	CRC(Li Hi)
Read humidity revised value	ADD/00	03	00 03	00 01	CRC(Li Hi)

Slave response

Function	Address	Command	Bits length	Content	Check
Read temperature/ humidity	ADD/00	04	04	D0 D1 D2 D3①	CRC(Li Hi)
Read address	ADD/00	03	02	00 ADD	CRC(Li Hi)
Read temperature revised value	ADD/00	03	02	D0 D1②	CRC(Li Hi)
Read humidity revised value	ADD/00	03	02	D0 D1③	CRC(Li Hi)

Host white operation

Function	Address	Command	Initial address	Content	Check
White address	ADD/00	06	00 00	00 ADD	CRC(Li Hi)
Read temperature revised value	ADD/00	06	00 02	D0 D1②	CRC(Li Hi)
Read humidity revised value	ADD/00	06	00 03	D0 D1③	CRC(Li Hi)

Slave response

Function	Address	Command	Initial address	Content	Check
White address	ADD/00	06	00 00	00 ADD	CRC(Li Hi)
Read temperature revised value	ADD/00	06	00 02	D0 D1②	CRC(Li Hi)
Read humidity revised value	ADD/00	06	00 03	D0 D1③	CRC(Li Hi)

CRC check generator polynomial 0xA001 (1010 0000 0000 0001)

Remarks:

A. D0d1 temperature value, unsigned fixed point integer data
   Actual temperature=(D0D1-4000)/100
   D2D3 humidity value, unsigned fixed point integer data
   Actual humidity=D2D3/100

B. Unsigned fixed point integer data. D0D1 is 100 times of actual revised value.
   Because of the device self-heating effect, the measurement temperature will be higher than actual temperature, please deduct the revised value from the measurement value.

C. Unsigned fixed point integer data. D0D1 is 100 times of actual revised value.
   Because of the device self-heating effect, the measurement humidity will be lower than actual humidity, please add the revised value from the measurement value.