XY-MD03 RS485 MODBUS-RTU Temperature Humidity Transmitter

1.Description:

XY-MD03 is a temperature humidity sensor probe made of PE material with built-in SHT40 sensor. By using the RS485 interface and MODBUS communication protocol, the measured temperature and parameter values are read through instructions.

2.Features:

1>.RS485 communication interface
2>.MODBUS communication protocol
3>.Custom Control Instructions
4>.PE waterproof probe
5>.Built-in EMC anti-interference
6>.Reverse polarity protection
7>.Low power consumption, high accuracy
8>.Temperature and humidity can be calibrated

3.Parameters:

1>.Working Voltage:DC 5V-28V
2>.Work Power:0.05W(Max)
3>.Built-in Sensor:SHT40
4>.Tested Temperature Range:-40℃~80℃
5>.Temperature Control Precision:+/-0.3℃
6>.Temperature Resolution:0.1℃
7>.Tested Humidity Range:0%RH~100%RH
8>.Humidity Control Precision:3%RH
9>.Humidity Resolution:0.1%RH
10>.Communication Interface:RS485
11>.Communication Protocol: MODBUS-RTU
12>.Output Refresh Speed: 0.5s
13>.Probe Size:70*16*16mm
14>.Wire Length:100cm

4.Wire Interface:

1>.Red wire: VCC. Connect to power positive pole.
2>.Black: GND. Connect to power negative pole.
3>.Yellow: RS485-A. Data cable.
4>.White: RS485-B. Data cable.

5.MODBUS-RTU Protocol:

1>.It can be control by MODBUS-RTU control protocol which support function code 0x03/0x06/0x10.
2>.Baud rate: 9600 14400 19200 38400 56000 57600 115200
3>.Device address:001~247
4>.Communication Interface:RS485
5>.Register Description:

Function Command	Command Functions			
0x03	Read Saved Register			
0x04	Read Input Register			
0x06	Write one Saved Register			
0x10	Write multiple Saved Registers			
Register Type	Register Address	PLC/Configure Address	Data Description	Byte
Input Resistor	0x0001	30002	Temperature Value	2
	0x0002	30003	Humidity Value	2
Saved Register	0x0101	40258	Device Address:001~247	2
	0x0102	40259	Baud Rate: 9600 14400 19200 38400 56000 11520(means 115200)	2
	0x0103	40260	Temperature Verification Value (/10) -10.0 ~ 10.0	2
	0x0104	40261	Humidity Verification Value (/10) -10.0 ~ 10.0	2

6>.Host Sends Data Format:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity N High Byte	Register Quantity N Low Byte	CRC Check High Byte	CRC Check Low Byte

7>.Slave Response Data Format:

Slave Address	Response Function Code	Byte	Register Address High Byte	Register Address Low Byte	Register Quantity N High Byte	Register Quantity N Low Byte	CRC Check High Byte	CRC Check Low Byte

8>.Host Read Temperature Value Command 0x04:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x00	0x01	0x00	0x01	0x60	0x0A

9>.Slave Response Output Temperature Value:

Slave Address	Response Function Code	Byte	Register Address High Byte	Register Address Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x02	0x01	0x31	0x79	0x74

Note:

　　9.1>.Temperature value is 0x0131,Decimal System is 305, so the actual output temperature is 305/10=30.5℃ or 305/10*1.8+32=86.9℉

　　9.2>.Temperature is a signed hexadecimal value, if return value is 0xFF33, you can get value 0x00CC+0x0001=0x00CD by ~ negate each bit without symbol from 0xFF33. So the 0x00CD's decimal system is 205, so the actual output temperature is -205/10=-20.5℃ or -205/10*1.8+32= -4.9℉

10>.Host Read Humidity Value Command 0x04:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x00	0x02	0x00	0x01	0x90	0x0A

11>.Slave Response Output Temperature Value:

Slave Address	Response Function Code	Byte	Register Address High Byte	Register Address Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x02	0x02	0x22	0xD1	0xBA

Note:Humidity value is 0x0222,Decimal System is 546, so the actual output humidity is 546/10=54.6%RH

12>.Host Read Temperature and Humidity Value Command 0x04:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x00	0x01	0x00	0x02	0x20	0x0B

13>.Slave Response Output Temperature and Humidity Value:

Slave Address	Response Function Code	Byte	Temperature High Byte	Temperature Low Byte	Humidity High Byte	Humidity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x04	0x04	0x01	0x31	0x02	0x22	0x2A	0xCE

Note: Temperature value is 0x0131 and the humidity value is 0x0222.

14>.Read Slave Address Command 0x03:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x03	0x01	0x01	0x00	0x01	0xD4	0x36

15>.Slave Response Value:

Slave Address	Response Function Code	Byte	Slave Address High Byte	Slave Address Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x03	0x02	0x00	0x01	0x30	0x18

Note: Slave address is 0x0001

16>.Modify Slave Address Command 0x06:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x06	0x01	0x01	0x00	0x08	0xD8	0x30

Note: Modify slave address to 0x0008

17>.Slave Response Output Temperature and Humidity Value:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x06	0x01	0x01	0x00	0x08	0xD8	0x30

18>.Modify Multiple Register Command 0x10:

Slave Address	Function Code	Start Register Address High Byte	Start Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	Byte	Register #1 High Byte	Register #1 Low Byte	Register #2 High Byte	Register #2 Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x10	0x01	0x01	0x00	0x02	0x04	0x00	0x20	0x25	0x80	0x25	0x09

Note: Modify slave address to 0x0020 and modify baud rate to 0x2580=9600

19>.Slave Response:

Slave Address	Function Code	Register Address High Byte	Register Address Low Byte	Register Quantity High Byte	Register Quantity Low Byte	CRC Check High Byte	CRC Check Low Byte
0x01	0x10	0x01	0x01	0x00	0x02	0x11	0xF4

6.Custom Control Command:

1>.Baud rate: default 9600

2>.8Bit,1,N

3>.RS485 custom control commands:

Command	Function	Range	Return Test	Return Description
READ	Read current temperature and humidity value.	----	27.4℃,67.7%	Temperature is 27.4℃ Humidity is 67.7%
AUTO	Automatic read current temperature and humidity value.	----	27.4℃,67.7%	Temperature is 27.4℃ Humidity is 67.7%
STOP	Stop automatic read function.	----	----	
BR:XXXX	Set baud rate.	9600~115200	BR:9600	Baud rate is 9600
TC:XX.X	Calibration temperature value.	-10.0~10.0	TC:02.0	Temperature verification value is 2.0℃
HC:XX.X	Calibration humidity value.	-10.0~10.0	HC:-05.1	Humidity verification value is 5.1%RH
HZ:XXX	Set the frequency of automatic data reading.	0.5,1,2,5,10	HZ:2	Read twice per second
PARAM	Read the current system settings parameters.	----	----	----

Note: PARAM return value such as

TC:0.0,HC:0.0,BR:9600,HZ:1,SLAVE ADD:1

Means:

3.1>.Temperature verification value is 0.0℃

3.2>.Humidity verification value is 0.0%RH

3.3>.Baud rate is 9600

3.4>.Automatic read temperature and humidity value once per second

3.5>.MODBUS slave address is 0x01

7.Application:

1>.Greenhouse greenhouse

2>.Storage

3>.Communication control room

4>.Intelligent office building

5>.Laboratory

8.Package:

1>.1pcs XY-MD03 Temperature Humidity Sensor PE Waterproof Probe

Measuring range:
-40℃~80℃/0%RH~100%RH

Measuring precision:
±0.3℃/±3%RH at 60%RH 25℃

Material quality: Metal waterproof probe

Black wire: GND

Red wire: VCC

White wire: RS485-B

Yellow wire: RS485-A

16mm

70mm

| Greenhouse | Warehouse | Machine Room | Building Control | Pharmacy | Laboratory |