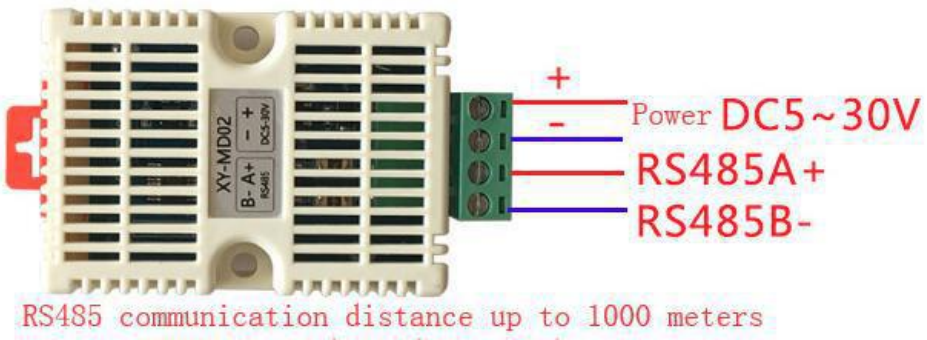
Instruction

Using industrial grade chips, high-precision imported SHT20 temperature and humidity sensor ensures excellent reliability, high precision and interchangeability. Adopt RS485 hardware interface (with lightning protection design), the protocol layer is compatible with standard industrial Modbus-RTU protocol. This product integrates MODBUS protocol and common protocol. Users can choose communication protocol by themselves. The common protocol has automatic upload function (connecting RS485 will automatically output temperature and humidity through serial port debugging tool).

Feature:

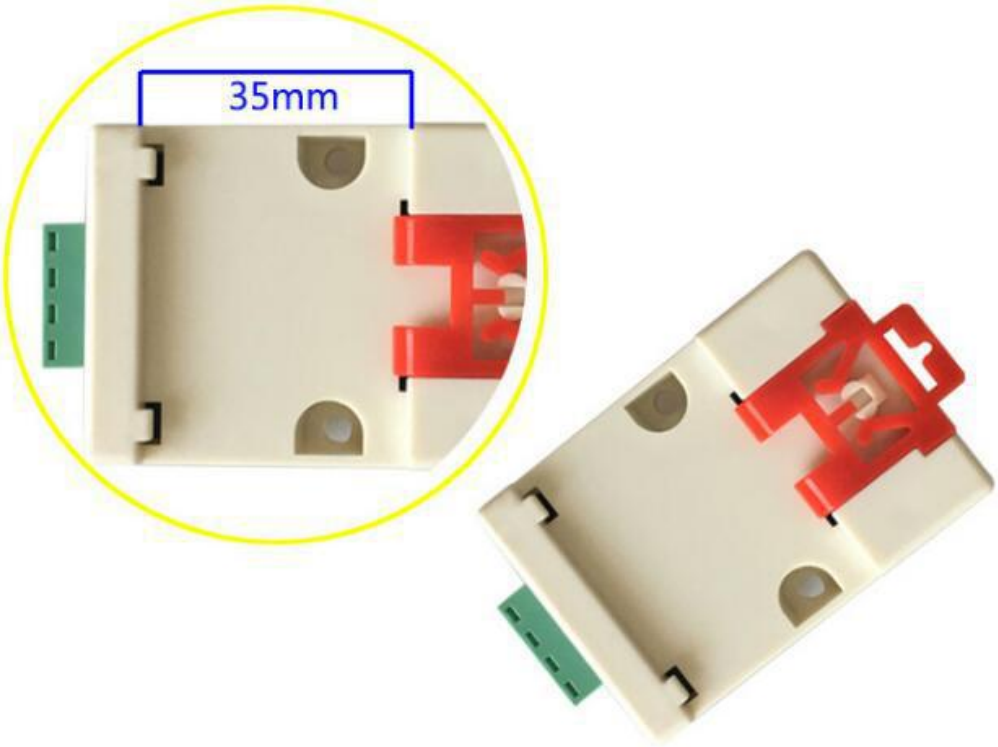
DC power supply: DC5-30V
Output signal: RS485 signal
Communication protocol: Modbus-RTU protocol and custom common protocol
Communication address: 1-247 can be set, default 1
Baud rate: can be set, default 9600, 8-bit data, 1 stop, no parity
Temperature accuracy: +-0.5 °C (25 °C)
Humidity accuracy: +-3%RH
Temperature range: -40 ° C ~ +60 °C
Humidity range: 0%RH~80%RH
Temperature resolution: 0.1 °C
Humidity resolution: 0.1% RH
Device power consumption: <=0.2W

Wiring:



Size:

Standard 35mm rail mounting for direct mounting to standard DIN35 rails



Function code used by the product:

0x03: read holding register
0x04: Read input register
0x06: Write a single holding register
0x10: Write multiple holding registers

Register type	Register address	Data content	Number of bytes
Input register	0x0001	Temperature value	2
	0x0002	Humidity value	2
Holding register	0x0101	Device address (1~247)	2
	0x0102	Baud rate 0:9600 1:14400	2

		2:19200	
	0x0103	Temperature correction value (/10) -10.0~10.0	2
	0x0104	Humidity correction value (/10) -10.0~10.0	2

MODBUS command frame

The host reads the temperature command frame (0x04):

Slave address	Function code	Register address High byte	Register address Low byte	Number of registers High byte	Number of registers Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x00	0x01	0x00	0x01	0x60	0x0a

Slave response data frame:

Slave address	Function code	Number of bytes	temperature High byte	temperature Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x02	0x01	0x31	0x79	0x74

Temperature value = 0x131, converted to decimal 305, actual temperature value = 305 / 10 = 30.5 °C

Note: The temperature is a signed hexadecimal number, the temperature value is 0xFF33, converted to decimal -205, the actual temperature = -20.5 °C;

The host reads the humidity command frame (0x04):

Slave address	Function code	Register address High byte	Register address Low byte	Number of registers High byte	Number of registers Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x00	0x02	0x00	0x01	0x90	0x0A

Slave response data frame:

Slave address	Function code	Number of bytes	temperature High byte	temperature Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x02	0x02	0x22	0xD1	0xBA

Humidity value = 0x222, converted to decimal 546, actual humidity value = 546 / 10 = 54.6%;

Continuous reading of the temperature and humidity command frame (0x04):

Slave address	Function code	Register address High byte	Register address Low byte	Number of registers High byte	Number of registers Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x00	0x01	0x00	0x02	0x20	0x0B

Slave response data frame:

Slave address	Function code	Number of bytes	temperature High byte	temperature Low byte	Humidity High byte	Humidity Low byte	CRC High byte	CRC Low byte
0x01	0x04	0x04	0x02	0x22	0x02	0x22	0x2A	0xCE

Read the contents of the holding register (0x03):

Take the slave address as an example:

Slave address	Function code	Register address High byte	Register address Low byte	Number of registers High byte	Number of registers Low byte	CRC High byte	CRC Low byte
0x01	0x03	0x01	0x01	0x00	0x01	0xD4	0x36

Slave response data frame:

Slave address	Function code	Number of bytes	Slave address High byte	Slave address Low byte	CRC High byte	CRC Low byte
0x01	0x03	0x02	0x00	0x01	0x30	0x18

Modify the contents of the holding register (0x06):

To modify the slave address as an example:

Slave address	Function code	Register address High byte	Register address Low byte	Register value High byte	Register value Low byte	CRC High byte	CRC Low byte
0x01	0x06	0x01	0x01	0x00	0x08	0xD8	0x30

Modify slave address: 0x08 = 8

Slave response frame (same as send):

Slave address	Function code	Register address High byte	Register address Low byte	Register value High byte	Register value Low byte	CRC High byte	CRC Low byte

0x01	0x06	0x01	0x01	0x00	0x08	0xD4	0x0F

Continuously modify the holding register (0x10):

Slave address	Function code	Starting address High byte	Starting address Low byte	Number of registers High byte	Number of registers Low byte	Number of bytes	Register 1 High byte	Register 1 Low byte	Register 2 High byte	Register 2 Low byte	CRC High byte	CRC Low byte
0x01	0x10	0x01	0x01	0x00	0x02	0x04	0x00	0x20	0x25	0x80	0x25	0x09

Modify slave address: 0x20 = 32

Baud rate: 0x2580 = 9600

Slave response frame:

Slave address	Function code	Register address High byte	Register address Low byte	Number of registers High byte	Number of registers Low byte	CRC High byte	CRC Low byte
0x01	0x10	0x00	0x11	0x00	0x04	0xD4	0x0F

Normal version agreement:

The baud rate defaults to 9600 (user can set it by itself), 8-bit data, 1 bit stop, no parity

RS485 communication

Serial command	Description
READ	Trigger a temperature and humidity report (27.4 ° C, 67.7% temperature 27.4 ° C humidity 67.7%)
AUTO	Start the automatic temperature and humidity reporting function (27.4 ° C, 67.7% temperature 27.4 ° C humidity 67.7%)
STOP	Stop temperature and humidity automatic reporting
BR:XXXX	Set baud rate 9600~19200 (BR: 9600 baud rate is 9600)
TC:XX.X	Set temperature calibration (-10.0~10.0)

	(TC: 02.0 temperature correction value is 2.0 °C)
HC:XX.X	Set humidity calibration (-10.0~10.0) (HC:-05.1 Humidity correction value is -5.1%)
HZ:XXX	Set the temperature and humidity reporting rate (0.5,1,2,5,10) (HZ: 2 automatic reporting rate 2Hz)
PARAM	Read system current settings

PARAM instruction:

TC: 0.0, HC: 0.0, BR: 9600, HZ: 1 -> Temperature correction value 0.0 Humidity correction value 0.0 Baud rate 9600 Reporting rate 1 Hz

SLAVE_ADD: 1 -> MODBUS slave address 0x01