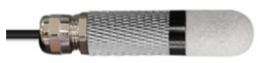
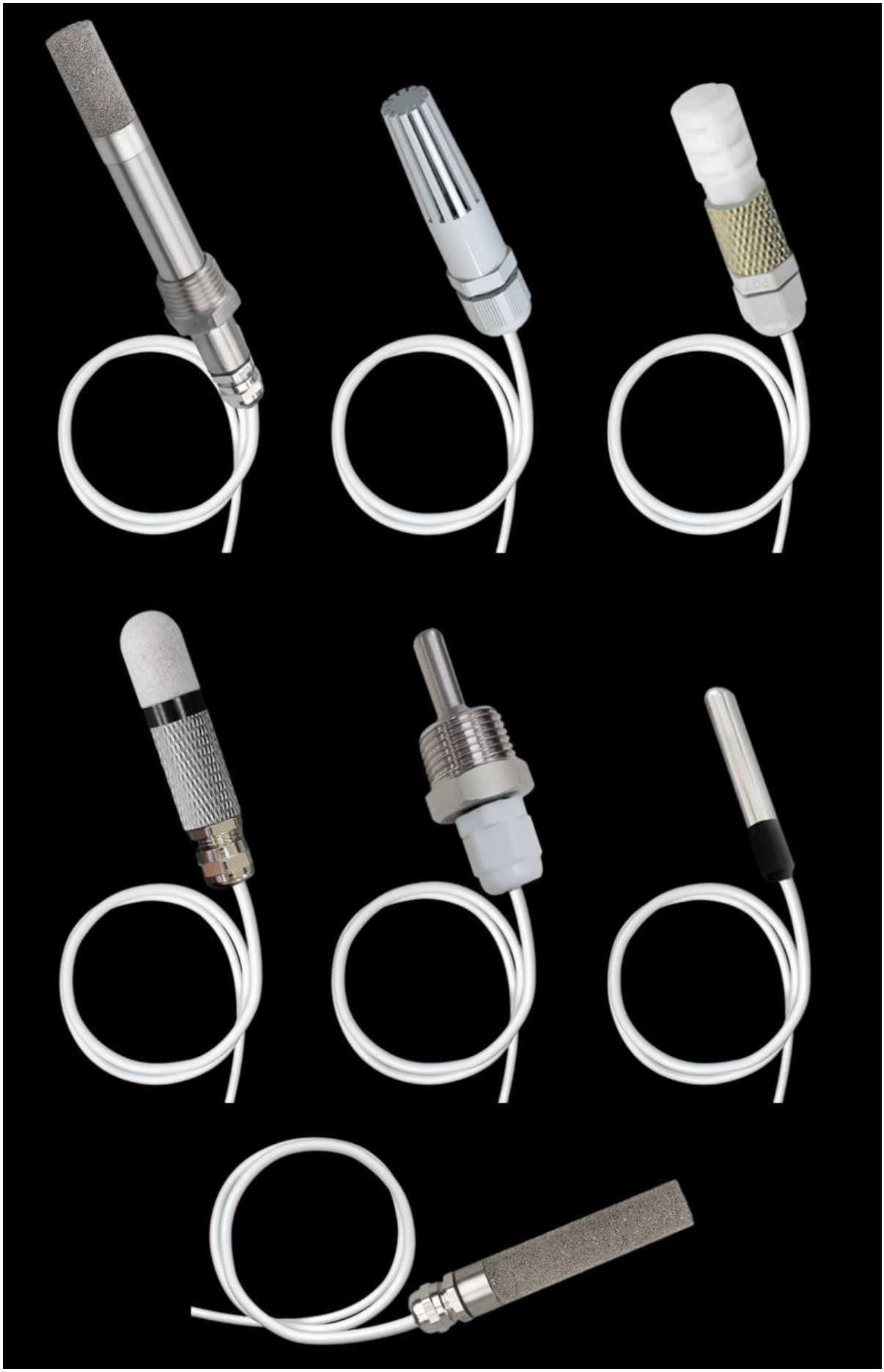
CWT-THxxS Series RS485 temperature humidity sensor

Basic feature

- Power: DC5V~DC24V
- Temperature Measuring Range : -30℃~80℃
- Humidity Measuring Range: 0～100%RH
- Measuring Precision：
  Temperature：±0.5℃ (resolution: 0.1℃)
  Humidity：±5%rh (resolution: 0.1 rh)
- Output: RS485 (Protocol MODBUS RTU)
- Consumption ＜0.1W
- RS485 Communication distance: up to 800m
- Cable length: 0.8m

Model	Picture	Specification	application
CWT-TH01S		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP30	Not waterproof, widely used in communication rooms, intelligent buildings, workshops, warehouse, medicine warehouse, library, museum, laboratory, office, ventilation duct etc.
CWT-TH02S		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP44	
CWT-TH03S		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP44	Metal probe, with dustproof and waterproof capacity, can be used in excessive dust environment
CWT-TH03S-M		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP44 • With mounting bracket	
CWT-TH03S-H		• Temperature Measuring Range : -40℃~120℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP44	Wide range temperature measurement, metal probe, with dustproof and waterproof capacity, can be used in excessive dust environment
CWT-TH03S-H-M		• Temperature Measuring Range : -40℃~120℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP44 • With mounting bracket	
CWT-TH04S		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP67	IP67 dustproof and waterproof capacity, can be used in severe environment
CWT-TH05S		• Temperature Measuring Range : -30℃~80℃ • Humidity Measuring Range: 0 ~ 100%RH • Protection: IP65	BSP G1/2" Thread Probe, measure air temperature humidity in pipe (can not measure water)
CWT-T01S		• Temperature Measuring Range : -30℃~80℃ • Protection: IP65	Measure air or water temperature
CWT-T02S		• Temperature Measuring Range : -30℃~80℃ • Protection: IP65	Measure surface temperature of object
CWT-T03S		• Temperature Measuring Range : -30℃~80℃ • Protection: IP65	BSP G1/2" Thread Probe measure corrosive liquid temperature in pipe


unit： mm
15
66.5
17
69
21
162
17
30
71.5
15
87
7
22
13
63
8
50.5
8.4
8.7
0.7
18
7
18
22
4*R2



Wiring

Cable color	description
Brown	Power + (DC5-30V)
black	Power -
Yellow （or green）	RS485 A+
Blue	RS485 B-

RS485 communication Default parameters: 4800,n,8,1

Default device address is 1

Modbus RTU protocol

Read status registers, read function code: 0x30					
Register address (Hex)	PLC Address (decimal)	meaning	Number of bytes	unit	remark
0000	40001	humidity	2	0.1%rh	Read
0001	40002	temperature	2	0.1℃	Read
Parameters registers, read function code: 0x30, write function code: 0x60					
07D0	42001	Slave ID	2	1-254	Read/Write
07D1	42002	baud rate	2	0: 2400 1: 4800 2: 9600 Default 4800	Read/Write
0050	40081	Temperature calibration value	2	0.1℃	Read/Write
0051	40082	Humidity calibration value	2	0.1%rh	Read/Write

E.g., master read temperature humidity:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x00	0x00	0x00	0x02	0xC4	0X0B

Sensor responds:

Address	Function Code	Number of byte	Humidity value	Temperature value	Error Check (Lo)	Error Check (Hi)
0x01	0x03	0x04	0x01 0xE6	0xFF 0x9F	0x1B	0xA0

Temperature calculates:

When temperature less than 0, value will be responded in complement

Temperature: FF9F H= -97 => temperature= -9.7℃

Humidity: 1E6 H= 486 => humidity= 48.6%

Set slave ID

E.g., set slave ID=2, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	ID	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD0	0x00 0x02	0x08	0x86

Set baud rate

E.g., set baud rate to 9600, Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Sensor responds:

Address	Function Code	Start Address (Hi)	Start Address (Lo)	command	Error Check (Lo)	Error Check (Hi)
0x01	0x06	0x07	0xD1	0x00 0x02	0x59	0x46

Enquiry slave ID

Master sends

Address	Function Code	Start Address (Hi)	Start Address (Lo)	Number of Points (Hi)	Number of Points (Lo)	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x07	0xD0	0x00	0x01	0x91	0x59

Sensor responds:

Address	Function Code	Number of Points	address	Error Check (Lo)	Error Check (Hi)
0xFF	0x03	0x02	0x00 0x01	0x50	0x50