

## SM2110M

### 4-20mA protective temperature and humidity sensor

#### User Manual

File Version: V23.8.10

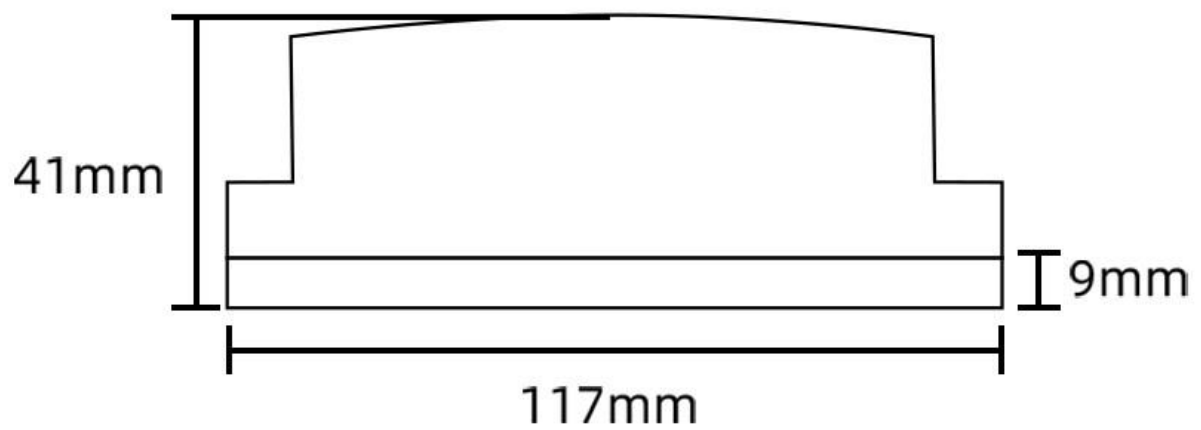
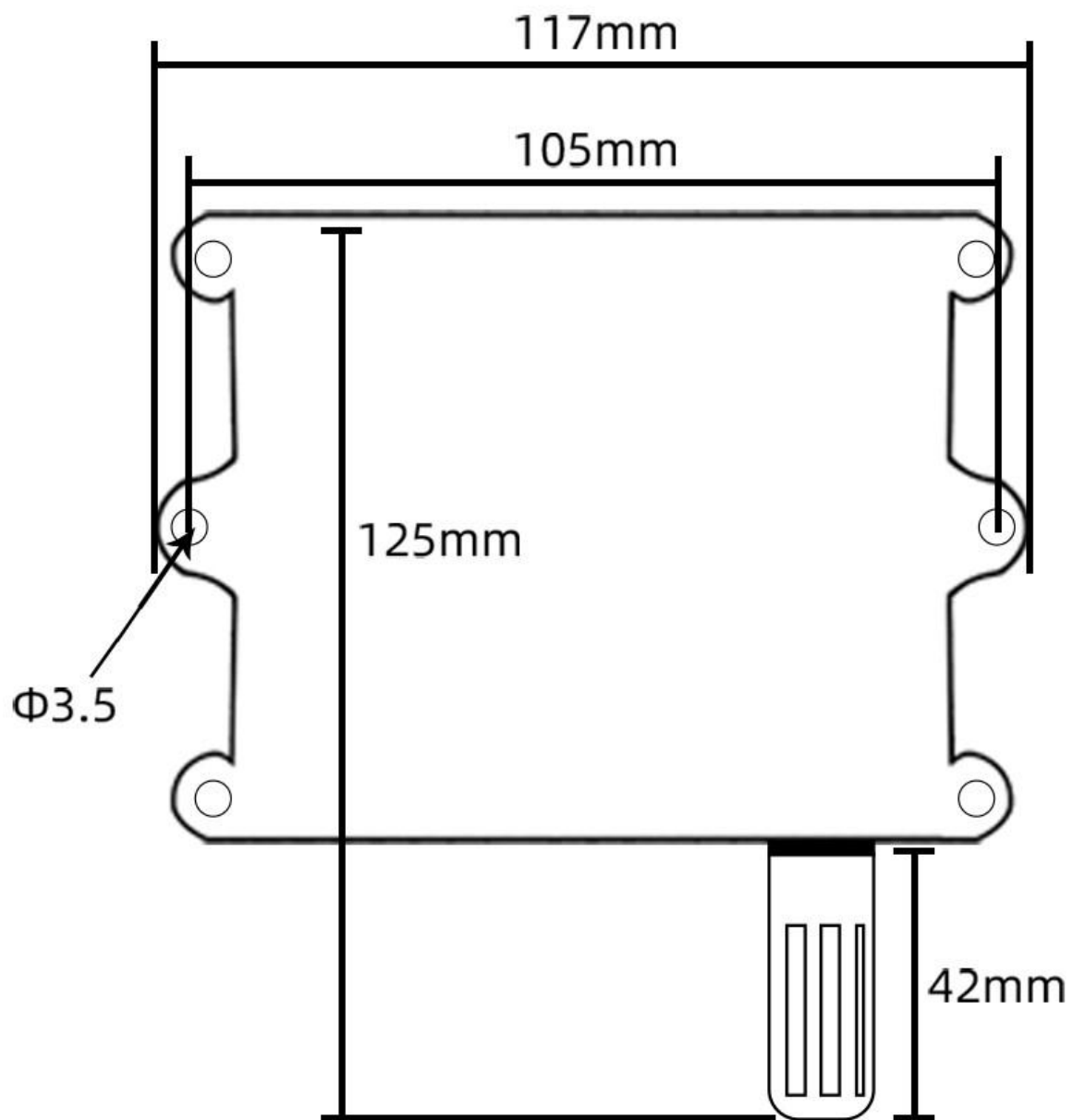


SM2110M using the standard DC4-20mA current output signal,easy access to PLC , DCS and other instruments or systems for monitoring temperature,humidity state quantities.The internal use of high-precision sensing core and related devices to ensure high reliability and excellent long-term stability,can be customized RS232,RS485,CAN,4-20mA,DC0~5V\10V,ZIGBEE,Lora,WIFI,GPRS and other output methods.

**Technical Parameters**

Technical parameter	Parameter value
Brand	SONBEST
Temperature measuring range	-30℃~80℃
Temperature measuring accuracy	±0.5℃ @25℃
Humidity measuring range	0~100%RH
Humidity accuracy	±3%RH @25℃
Communication Interface	DC4~20mA
Power	DC12~24V 1A
Running temperature	-30~85℃
Working humidity	5%RH~90%RH

**Product Size**



## Wiring instructions

In the case of broken wires, wire the wires as shown in the figure. If the product itself has no leads, the core color is for reference.

### How to use?

Temperature and humidity sensors can be widely used in animal breeding, file management, food storage, greenhouses, pharmaceutical storage, tobacco industry, industrial control industry and other indoor and outdoor temperature and humidity measurement fields



Grain storage



Greenhouses



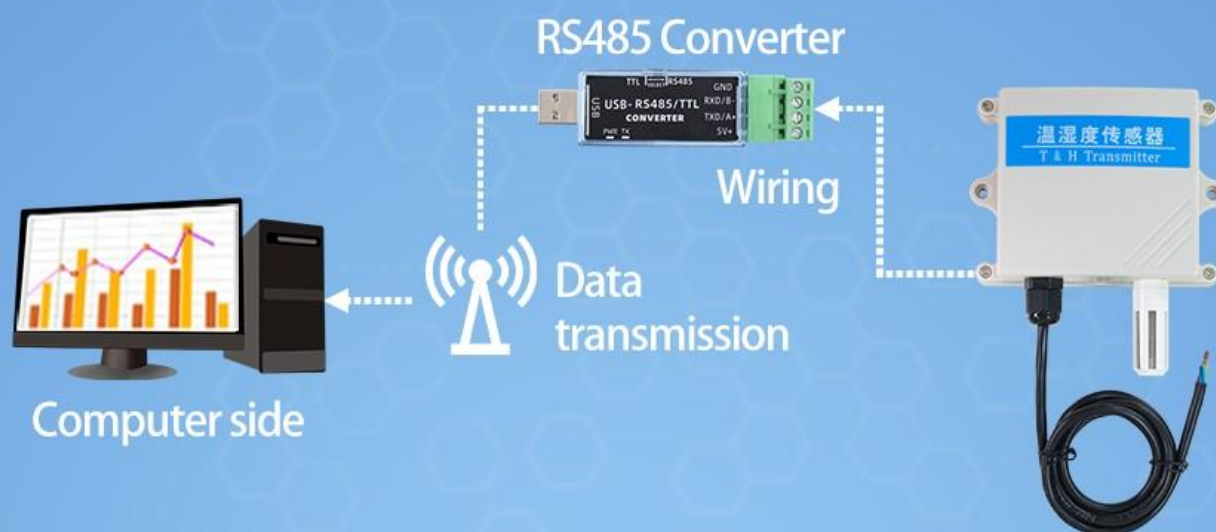
Pharmaceutical storage



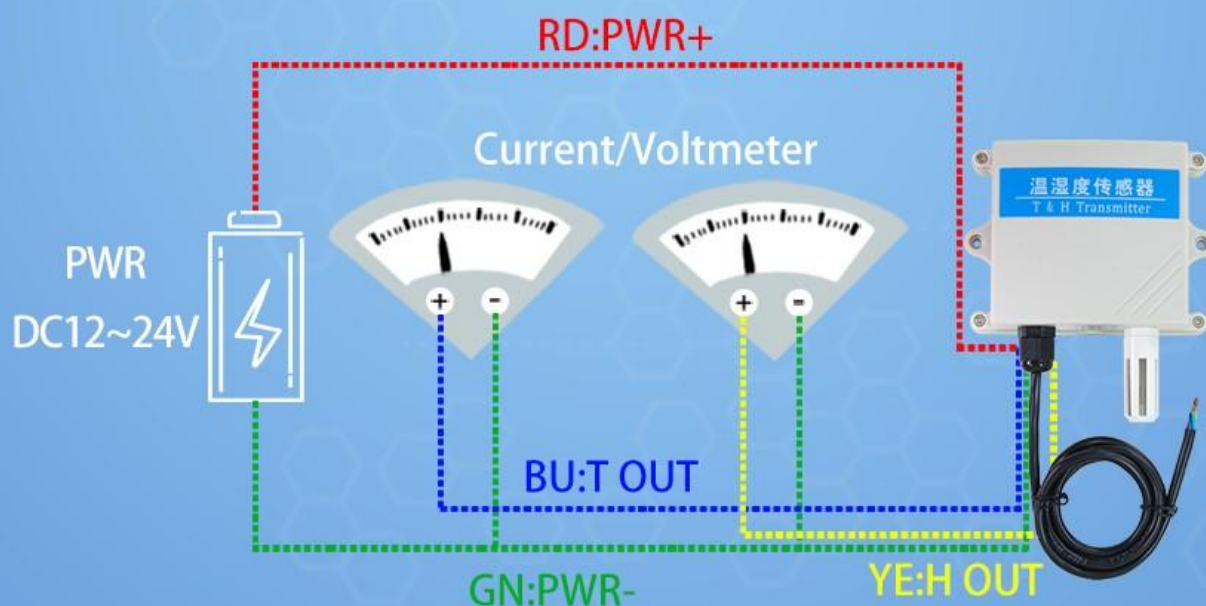
Tobacco industry

## Application solution

## ■ RS485 Wiring



## ■ Current & voltage wiring method



## Product List





SM2110B temperature and humidity sensor  
(excluding converter and power supply)



Reminder card



Certificate

### 1. temperature and current computing relationship

For example, the range is  $-30\sim 80^{\circ}\text{C}$ , the analog output is  $4\sim 20\text{mA}$  current signal, temperature and current The calculation relationship is as shown in the formula:  $C = (A2-A1) * (X-B1) / (B2-B1) + A1$ , where A2 is temperature range upper limit, A1 is the lower limit of the range, B2 is current output range upper limit, B1 is the lower limit, X is the currently read temperature value, and C is the calculated current value. The list of commonly used values is as follows:

current(mA)	temperatureValue ( $^{\circ}\text{C}$ )	Calculation Process
4	-30	$(80-(-30))*(4-4)\div(20-4)+-30$
5	-23.125	$(80-(-30))*(5-4)\div(20-4)+-30$
6	-16.25	$(80-(-30))*(6-4)\div(20-4)+-30$
7	-9.375	$(80-(-30))*(7-4)\div(20-4)+-30$
8	-2.5	$(80-(-30))*(8-4)\div(20-4)+-30$
9	4.375	$(80-(-30))*(9-4)\div(20-4)+-30$
10	11.25	$(80-(-30))*(10-4)\div(20-4)+-30$
11	18.125	$(80-(-30))*(11-4)\div(20-4)+-30$
12	25	$(80-(-30))*(12-4)\div(20-4)+-30$

13	31.875	$(80-(-30))*(13-4)\div(20-4)+-30$
14	38.75	$(80-(-30))*(14-4)\div(20-4)+-30$
15	45.625	$(80-(-30))*(15-4)\div(20-4)+-30$
16	52.5	$(80-(-30))*(16-4)\div(20-4)+-30$
17	59.375	$(80-(-30))*(17-4)\div(20-4)+-30$
18	66.25	$(80-(-30))*(18-4)\div(20-4)+-30$
19	73.125	$(80-(-30))*(19-4)\div(20-4)+-30$
20	80	$(80-(-30))*(20-4)\div(20-4)+-30$

As shown in the above formula, when measuring 8mA, current current is 31.5℃。

## 2. humidity and current computing relationship

For example, the range is 0~100%RH, the analog output is 4~20mA current signal, humidity and current The calculation relationship is as shown in the formula:  $C = (A2-A1) * (X-B1) / (B2-B1) + A1$ , where A2 is humidity range upper limit, A1 is the lower limit of the range, B2 is current output range upper limit, B1 is the lower limit, X is the currently read humidity value, and C is the calculated current value. The list of commonly used values is as follows:

current(mA)	humidityValue (%RH)	Calculation Process
4	0.0	$(100-0)*(4-4)\div(20-4)+0$
5	6.3	$(100-0)*(5-4)\div(20-4)+0$
6	12.5	$(100-0)*(6-4)\div(20-4)+0$
7	18.8	$(100-0)*(7-4)\div(20-4)+0$
8	25.0	$(100-0)*(8-4)\div(20-4)+0$
9	31.3	$(100-0)*(9-4)\div(20-4)+0$
10	37.5	$(100-0)*(10-4)\div(20-4)+0$
11	43.8	$(100-0)*(11-4)\div(20-4)+0$
12	50.0	$(100-0)*(12-4)\div(20-4)+0$
13	56.3	$(100-0)*(13-4)\div(20-4)+0$
14	62.5	$(100-0)*(14-4)\div(20-4)+0$
15	68.8	$(100-0)*(15-4)\div(20-4)+0$
16	75.0	$(100-0)*(16-4)\div(20-4)+0$
17	81.3	$(100-0)*(17-4)\div(20-4)+0$
18	87.5	$(100-0)*(18-4)\div(20-4)+0$
19	93.8	$(100-0)*(19-4)\div(20-4)+0$
20	100.0	$(100-0)*(20-4)\div(20-4)+0$

As shown in the above formula, when measuring 8mA, current current is 29%RH。

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