

# User Manual

(Version 1.1)

## ESR-TH-ANA

Temperature and humidity sensing module



## Introduction

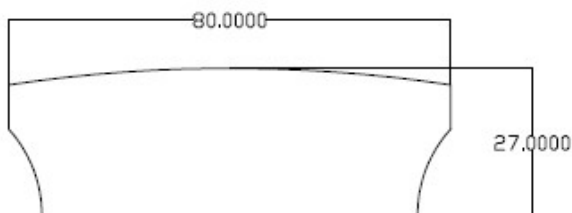
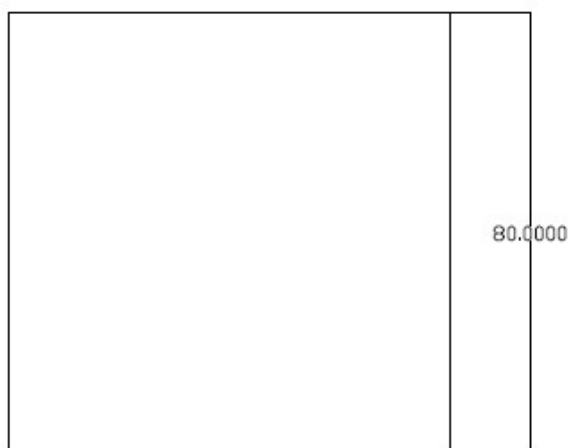
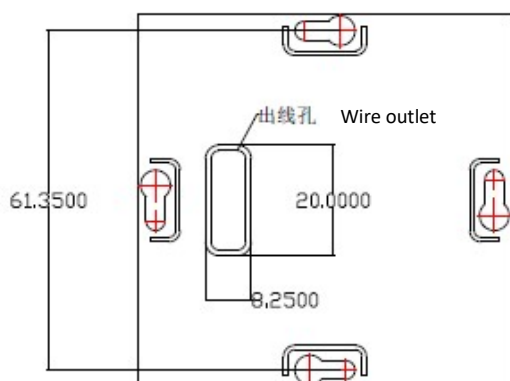
ESR-TH-ANA is one of the temperature and humidity sensor series developed by CORESTAR, which can be widely used in residential, light industrial HVAC, air conditioning and other fields.

The module can be powered by AC 12-24Vac or DC 9-30Vdc power supply. It supports multiple forms of analog output (selectable by dip switch), among which humidity supports 0.5~4.5V output or 4~20mA output, and temperature supports 0.5~4.5V output or independent NTC resistor output. It can be used with CORESTAR's programmable controller (PLC) or with devices of other brands.

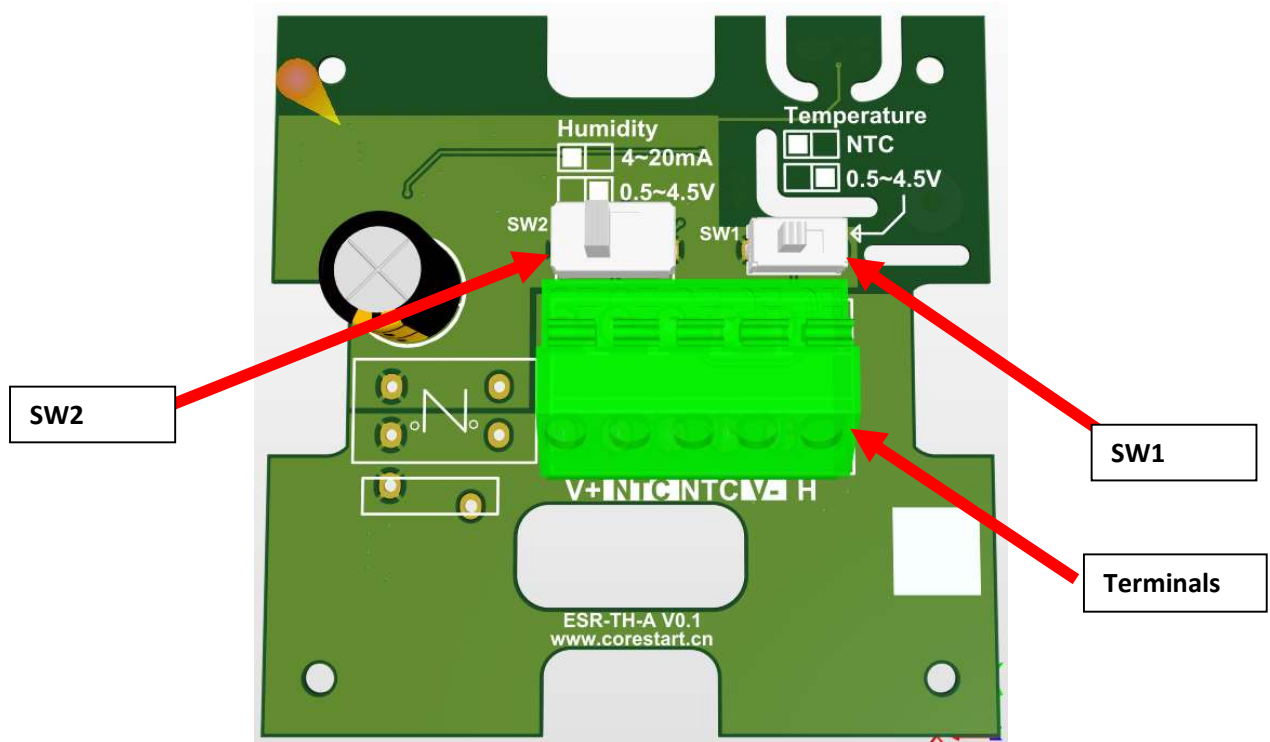
The module is installed as a wall mount type.

## Dimensions

(unit: mm)



## Terminals and DIP switch



No.	Label	Input/ Output	Description
1	V+	Input	Power supply V+
2	NTC	Output	NTC sensor end
3	NTC	Output	NTC sensor end Temperature voltage output (0.5~4.5V)
4	V-	Input	Power supply V-
5	H	Output	Humidity output 4~20mA Humidity output 0.5~4.5V

### Absolute maximum ratings

If the product exceeds the limit parameters listed in the table below in actual application, it will cause product instability, functional failure or even permanent damage.

Parameters	Min.	Max.	Unit
Operating temperature	-40	85	°C
Voltage on V+.	-0.3	32	V
Voltage on NTC ( NTC output )	0	10	V
Voltage on NTC ( 0.5~4.5V output )	-0.3	5.3	V
Voltage on H ( 4~20mA output )	0	30	V
Voltage on H ( 0.5~4.5V output )	-0.3	5.3	V

## Electronical specifications

Power supply	12-24Vac or 9-30Vdc	
Max. current	<30mA	
Installation	Wall mounting	
Terminals	Fixed screw terminal blocks,5pin, pitch 5.08mm	
Dimensions(mm)	Length x Width x Height=80x80x27	
Operating	-25T60°C <90%RH, non-condensing	
Storage	-35T70°C, <90%RH, non-condensing	
IP level	IP20	
Precision	Temperature	±0.5 (°C)
	Humidify	±3% (RH)

## Conversion formula

Humidify conversion:

$$V_H = 0.5 \sim 4.5V, RH(\%) = -12.5 + 25 * V_H$$

$$I_H = 4 \sim 20mA, RH(\%) = -12.5 + 25 * (0.25 * I_H - 0.5)$$

Temperature conversion:

$$V_T = 0.5 \sim 4.5V, T(^{\circ}C) = -66.875 + 43.75 * V_T$$

NTC parameters:

Resistance (25°C): 10kΩ

Precision: ±1%

Beta : 3435

## Wiring

