

THM80X Series (THM801 / 802 / 803)

Temp &amp; Humid.-THM80X

## Industrial High Accuracy Temp. &amp; Humidity Transmitter



THM802-Duct

THM803-Remote

THS801-Wall

## | Features |

- IP65 , rugged aluminum case, fit in variety harsh environment
- Capable of temperature compensation. Linear adjustment temperature & humidity by computer, analog output or option RS-485
- Measure high accuracy Temp. & humidity, reaction quickly, the sensor can work well after temporary condensation, long term stable in high humidity environment
- Process Temp. : up to 200°C, S.S. probe proof pressure : 10 bar, metal connector : installation repeatedly
- Switch multifunction physical quantities : [%RH] 、 [°C] 、 [mbar] 、 [g/kg] 、 [g/m<sup>3</sup>] 、 [kJ/kg]
- Calibration physical quantities, measuring range, analog output, station, etc
- Free calibration software : data logger / record 65535 datas / charts

## | Applications |

Semiconductor / Electronics / Industrial process monitoring / Air conditioning / Environmental ventilation control buildings / Factories / Hospitals / Clean rooms / Laboratories / Weather stations environmental monitoring / Storage rooms / Environmental chambers / Greenhouses / Mushroom farms / Paper / Printing Textiles / Steel and iron industry / Food / Chemical / Pharmaceutical / Biotechnology industry

## Specification

### Input

Signal type                      Capacitive humidity sensor & Pt 100 A class

### Output

Output                              0 ... 20 mA / 4 ... 20 mA

   0 ... 1 V / 0 ... 5 V / 0 ... 10 V

Signal connection              3-wire

Modbus                            2 analog / option RS-485 (Programmable)

Display type                      LCD Module with back light, double line character

Display range                    upon request, one decimal place

Height of character              5.55 mm

### Accuracy ( at +25 °C )

Temperature                       $\pm 0.15^{\circ}\text{C} \pm 0.002^{\circ}\text{C} \times t_{\text{actual}}$

Humidity ( 0 ... 90 %RH )      Nonlinear error :  $\pm 1.2\% \text{RH}$

   Hysteresis error :  $\pm 0.8\% \text{RH}$

   Repeatability error :  $\pm 0.4\% \text{RH}$

Humidity ( 90 ... 100 %RH )     $\pm 2\% \text{RH}$

Thermal sensitivity

Temp. error                        0.05%RH/°C

Load resistance                  Current output : Max. 500  $\Omega$

   Voltage output : min. 10 K $\Omega$

Output calibration( ZERO & SPAN )    Software / Keyboard

Response time t90 ( at 25 °C )    < 20 sec ( S.S.Metal grid filter with mesh )

   < 30 sec ( Sintered filter )

### Factory uncertainty ( at +25 °C )

Temp. uncertainty                  0.14°C

Humidity uncertainty              0.4%RH ( > 10 ... 20% )

   0.65%RH ( > 20 ... 90% )

   0.97%RH ( > 90 ... 98% )

### Electrical

Power supply                        DC 8 ... 35 V / AC 12 ... 30 V

Current consumption              DC 24 V : 60 mA / DC 12 V : 120 mA

   AC 24 V : 140 mA / AC 12 V : 230 mA

Electrical connection            M12 metal connector with 2 m cable or

   terminal ( Metal cable gland )

### Environmental

Medium                              Air

Temp. Operating                  Housing : -20 ... +80°C

   Housing with display : -20 ... +60°C

Humid. Operating                Housing : 0 ... 95% (Non-condensing)

Probe operating                  Wall type : -40 ... +80°C

   Duct type : -40 ... +120°C

   Remote type : -40 ... +200°C

Storage temperature            -25 ... +60°C

Probe pressure resistance      10 bar

### Certification

Certification                        CE

### Protection

IP rating                            Housing : IP65 ; Probe : IP20

Electrical protection            ■ Polarity protection

   ■ Over-voltage

   ■ Short-circuit

### Installation

Installation                        Metal fitting thread

### Material

Housing                              Aluminum alloy

Probe                                SUS 304

Cable                                Teflon

Weight                                THM801 : 455 g

   THM802 : 521 g

   THM803 : 635 g

\*Please make sure the product and the device which connect with RS-485 are on common ground, avoid damaged product.

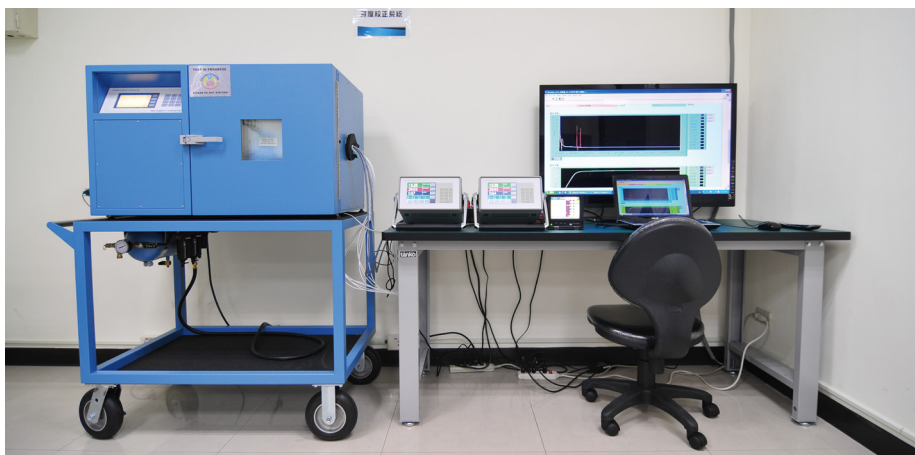
## Temp &amp; Humid.-THM80X

## | Measuring Range List |

Beside temp. & dew point, other physical quantities range as default setting

Physical quantity	THM801 Wall type	THM802 Duct type	THM803 Remote type
Temperature(T)	-40°C ... +80°C	-40°C ... +120°C	-40°C ... +200°C
Humidity(H)	0 ... 100%RH		
Dew point(D)	-40 dp°C ... +60 dp°C		
Frost point(F)	-40 ... 0 fp°C		
Wet-bulb Temp.(W)	0 ... 100°C		
Vapor pressure(E)	0 ... 1100 mbar		
Mixture ratio(R)	0 ... 999 g/kg		
Absolute humidity(A)	0 ... 700 g/m <sup>3</sup>		
Specific enthalpy(S)	0 ... 2800 kJ/kg		

## | Temp. &amp; Humidity QC Inspection System |



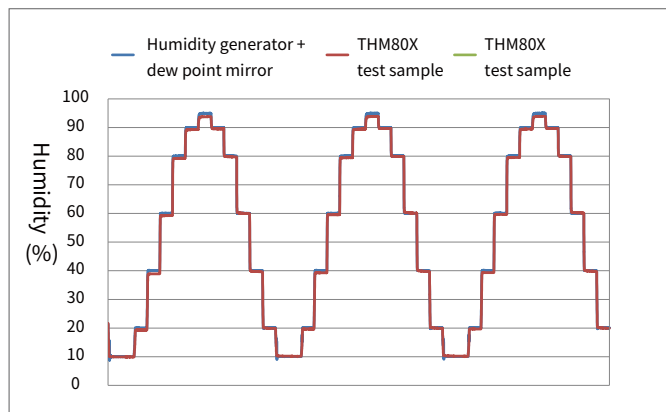
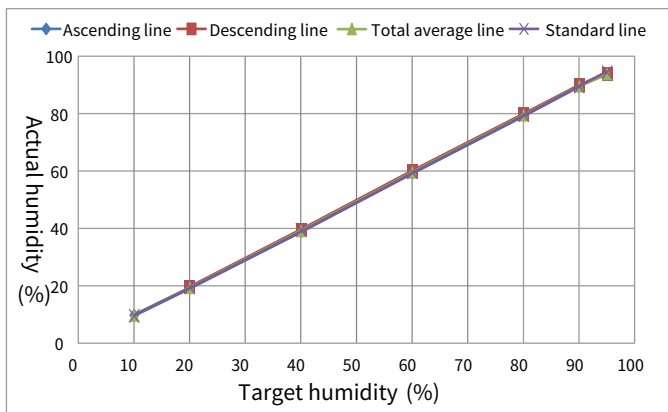
- System Facility
- Humidity generator
- Dew point mirror
- Laboratory level facility to produce products, and automatic QC inspection sheet printing and factory report

# Temp & Humid.-THM80X

## | 3-cycle curve |

※ According to IEC 61298 and ISO 17025 standard to measuring 3-cycle curve.

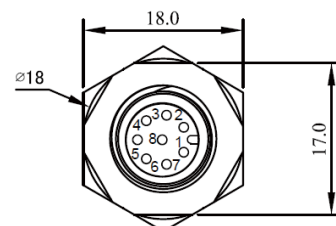
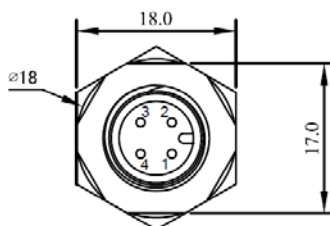
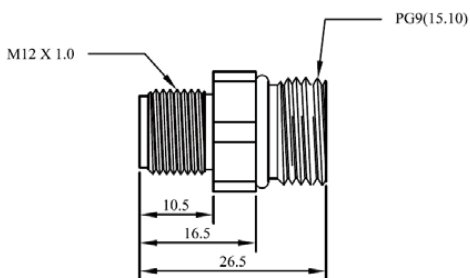
As the charts result, accuracy of test sample match with accuracy chart of humidity generator + dew point mirror



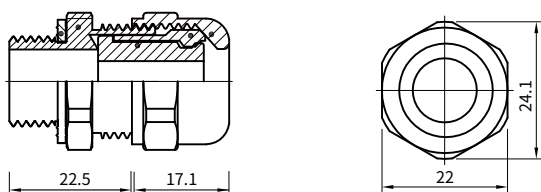
## | Electric Connector | Unit : mm

【M type (M12-4PIN metal connector) RS-485 or analog】

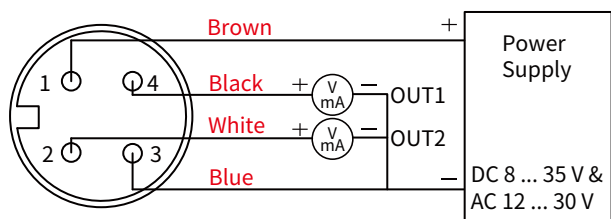
【M type (M12-8PIN metal connector) RS-485+analog】



【N type (M16 cable gland)】 RS-485+analog

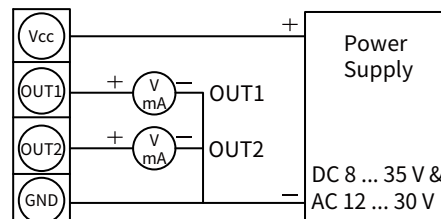


## | Analog Diagram |



M12 connector

M type (4P)

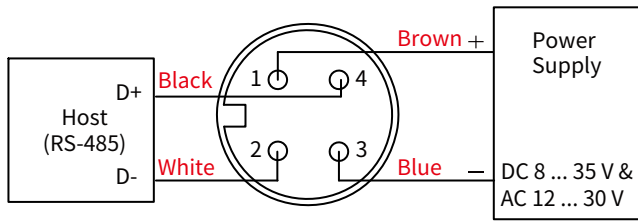


4P terminal

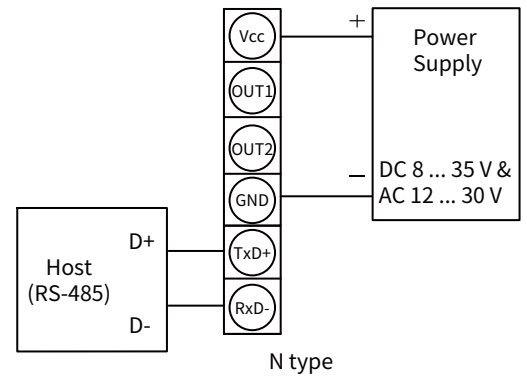
N type

# Temp & Humid.-THM80X

## | RS-485 Diagram |



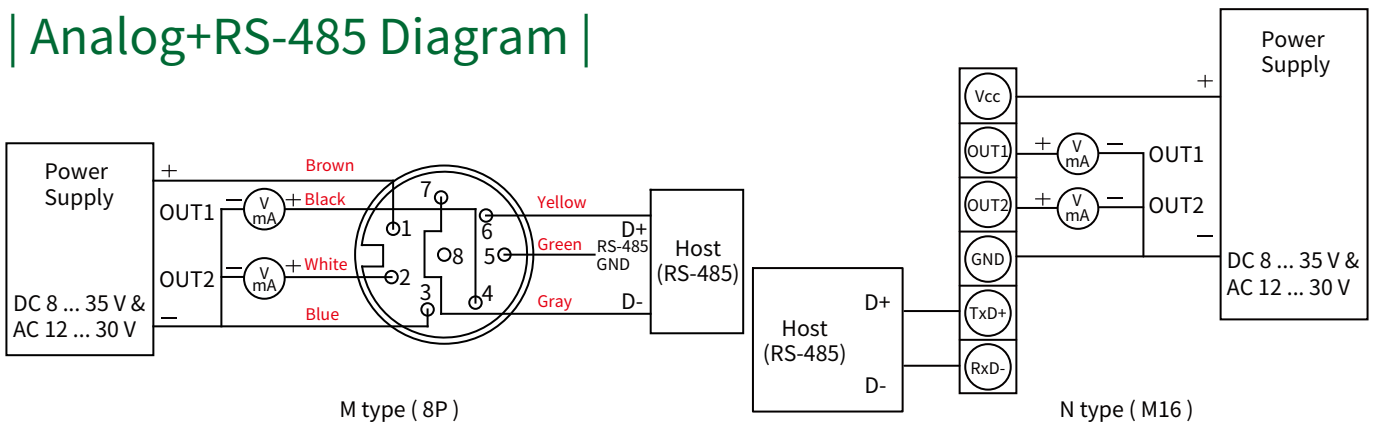
M type (4P)



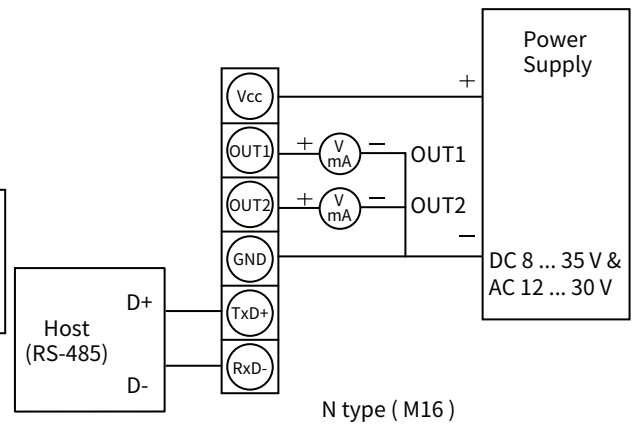
N type

※ When output of ordering code is RS-485 ( without analog ), RS-485 diagram of default setting is M type.

## | Analog+RS-485 Diagram |

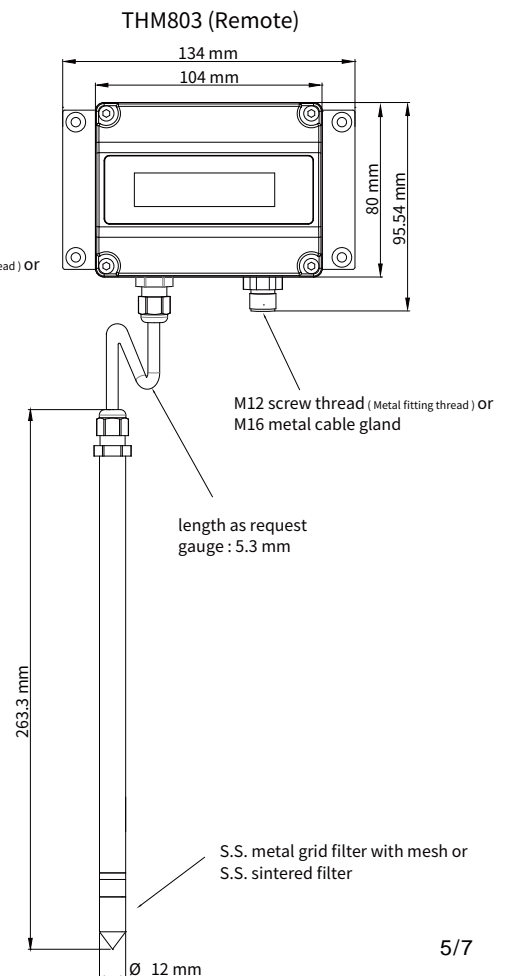
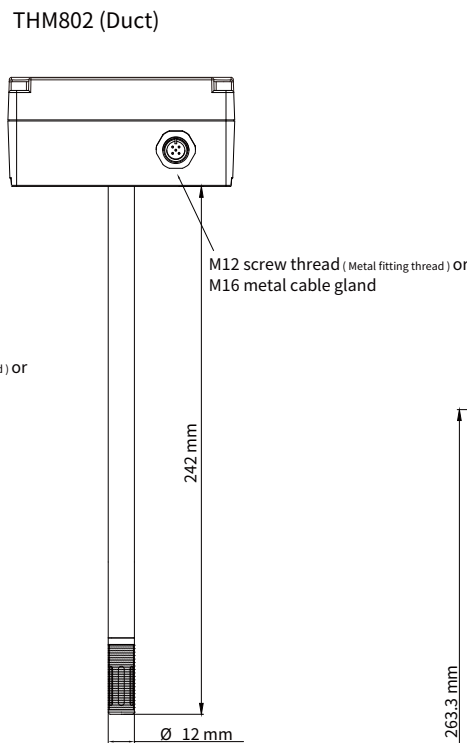
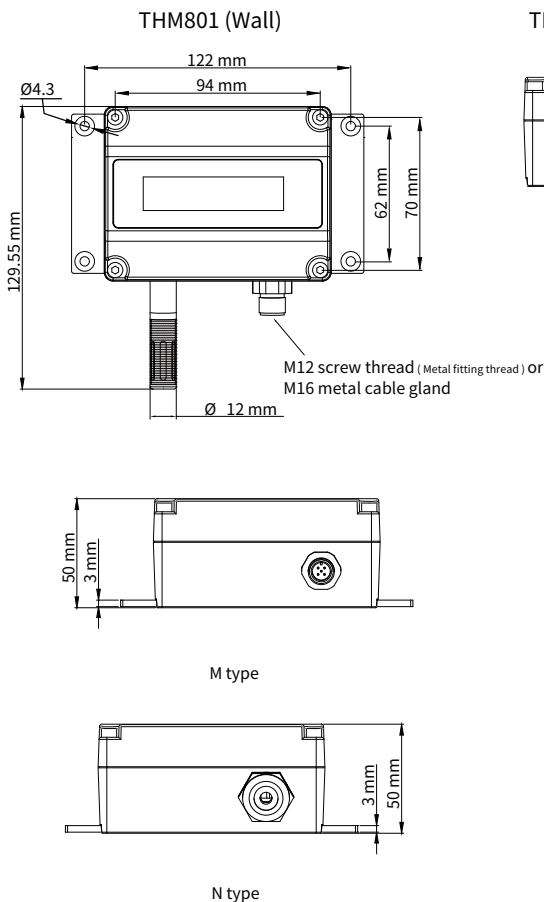


M type (8P)



N type (M16)

## | Dimension |



# Temp & Humid.-THM80X

## | Ordering Guide |

**THM80** **3** — **T** **48** **1** **H** **00** **1** — **D** **N** **S** **2** **U**

<p><b>Installation</b></p> <p>1 : Wall 2 : Duct 3 : Remote</p>	<p><b>Physical quantity output 1</b></p> <p>30 : 0 ... +50°C 38 : 0 ... +80°C 40 : 0 ... +100°C 42 : 0 ... +120°C 48 : 0 ... +180°C 47 : 0 ... +200°C 13 : -20 ... +40°C 14 : -40 ... +60°C 16 : -40 ... +120°C 18 : -40 ... +180°C 20 : -40 ... +200°C 49 : -70 ... +180°C 00 : As physical quantity measuring range list YY : Customized (up to 200°C)</p> <p>T : Temperature H : Humidity D : Dew point F : Frost-point W : Web-bulb temperature E : Vapor pressure R : Mixture ratio A : Absolute humidity S : Specific enthalpy N : RS-485 (Default Temp.)</p>	<p><b>Physical quantity scale 1</b></p> <p>1 : 4 ... 20 mA 2 : 0 ... 20 mA 6 : 0 ... 10 V 7 : 0 ... 5 V 8 : 0 ... 1 V 9 : RS-485</p>	<p><b>Signal output 1</b></p>	<p><b>Physical quantity output 2</b></p> <p>30 : 0 ... +50°C 38 : 0 ... +80°C 40 : 0 ... +100°C 42 : 0 ... +120°C 48 : 0 ... +180°C 47 : 0 ... +200°C 13 : -20 ... +40°C 14 : -40 ... +60°C 16 : -40 ... +120°C 18 : -40 ... +180°C 20 : -40 ... +200°C 49 : -70 ... +180°C 00 : As physical quantity measuring range list YY : Customized (up to 200°C)</p> <p>T : Temperature H : Humidity D : Dew point F : Frost-point W : Web-bulb temperature E : Vapor pressure R : Mixture ratio A : Absolute humidity S : Specific enthalpy N : RS-485 (Default Temp.)</p>	<p><b>Physical quantity output 2</b></p> <p>1 : 4 ... 20 mA 2 : 0 ... 20 mA 6 : 0 ... 10 V 7 : 0 ... 5 V 8 : 0 ... 1 V 9 : RS-485</p>	<p><b>Signal output 2</b></p>	<p><b>Display</b></p> <p>X : No D : Yes</p>	<p><b>Electrical connector</b></p> <p>N : M16 metal cable gland M : M12 metal connetor</p>	<p><b>Filter</b></p> <p>M : S.S. metal grid filter with mesh S : Sintered filter</p>	<p><b>Remote Cable Length (TEFLON)</b></p> <p>2 : 2 m 5 : 5 m — : Customized (Max. length : 10 m)</p>	<p><b>Other request</b></p> <p>W : Other request (Quote as demand) U : RS-485 + analog</p>
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## | Additional Option Test Report |

## ■ ILAC / TAF

YUDEN-TECH CO.,LTD. Calibration Laboratory - ( ILAC / TAF ) Test report.  
 (TAF accreditation :3032, complying with ISO / IEC 17025 ) TAF has mutual recognition arrangement with ILAC MRA

Project	Measurand level or range
Resistance thermometer	-40°C ... +300°C
Thermocouple thermometer	-20°C ... +300°C

Project	Measurand level or range
Hygrometer	Temperature : 0°C ... 69.5°C
	Humidity : 10% ... 95%

Project	Measurand level or range
Dew point transmitter	$\geq -80$ dp°C ... $\leq 60$ dp°C

## ■ ISO 9001

Project	Measurand level or range
RTD / Thermocouple	Resistance thermometer : -40°C ... +300°C
	Thermocouple thermometer : -20°C ... +300°C

Project	Measurand level or range
Temperature and Humidity	Temperature : 0°C ... 200°C
	Humidity : 0.1% ... 99.8%

Project	Measurand level or range
Dew point	$\geq -95$ dp°C ... $\leq 60$ dp°C