



THS30X Series (THS301/302/303/304/305/306/307) Multifunction Temperature & Humidity Transmitter



THS301-indoor
0~50°C



THS302-duct
-40~+100°C



THS303-duct
-40~+120°C



THS304/THS305-remote
PVC / TEFLON cable
-40~+80°C/-40~+100°C



THS306-remote
TEFLON cable
-40~+150°C



THS307-outdoor
-40~+80°C

Application

〈 Feature 〉

- Industrial sensor comes with high accuracy and long-term stability
- Capable of temperature compensation and linear adjustment
- Multifunction physical quantities — temperature & humidity/dew point/ frost point/wet-bulb temp./vapor pressure/mixture ratio/absolute humidity/ specific enthalpy
- Standard 2 analogue output or Modbus RS-485
- Option analogue output+ RS-485
- Probe : PC or S.S. ; Remote type : PVC or TEFLON cable
- Power supply : 8-35VDC and 12-35VAC
- RS-485 and Modbus RTU
- Free programmable software - physical quantities/output/data logger/charts/calibration
- Option : USB to RS-485 Converter

〈 Application 〉

- Monitoring for HVAC process/ air conditioning/ environmental ventilation control
- Building / factory / hospital/ clean room / Lab. / storeroom
- Cooling tank/crisper/environmental chambers/weather station
- Indoor pool/greenhouse/livestock nursery
- Pharmaceutical/textile/agriculture/food/manufacturing industry/ monitoring for process/drying facility

Specification

Input

input type Capacitive Humidity Sensor & PT 100Ω class A

Working Range Suggestion

temperature 0~50°C (THS301) ; -40~+100°C (THS302/305)
-40~+120°C (THS303) ; -40~+150°C (THS306)
-40~+80°C(THS304/307)

humidity 0~100%

dew point -40~+60°C

Frost Point(F) 、Wet-bulb Temperature(W) 、Vapor Pressure(E) 、Mixture Ratio(R) 、

Absolute Humidity(V) 、Specific Enthalpy(S) : please refer to physical quantity measuring range list

Output

output standard RS-485 or 2 analogue output

0-20mA/4~20mA/0-1V/0-5V/0-10V

signal Connection 3-wire

modbus RS-485 (programmable)
and 2 analogue output

display type LCD Module with back light, double line character

display range upon request, one decimal place

height of character 5.56mm

Linear Accuracy (at 25°C)

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

humidity $\pm 2\%\text{RH}$

temperature influence of body (at+25°C) 0.05%RH/°C

load Resistance current output : max. 500Ω / voltage output : min. 10KΩ

output calibration (ZERO & SPAN) software

response time t90 (temp. at +25°C) < 20S (membrane filter / S.S. metal grid filter
with mesh) ; < 30S(sintered filter)

Environment

Media measured air

Working temp. for housing -20~+60°C

Working humidity for housing 0~95%(non-cond.)

Working temp. for housing with display 0~60°C

Working temp. for probe PC probe : max. 120°C ; S.S. probe : max. 180°C

Cable (remote type) PVC cable : max. 80°C ; TEFLON cable : max. 180°C

Storage temperature -25~+60°C

proof pressure for S.S. probe 10bar

filter PC membrane filter (standard : PC probe)
sintered filter (standard : S.S. probe)

CE certification EN 61326-1 : 2006 、 EN 61326-2-2 : 2006

Emissions

EN 55011 : 2009/A1 : 2010

Immunity

IEC 61000-4-2 : 2008

IEC 61000-4-3 : 2006 / A1 : 2007 / A2 : 2010

IEC 61000-4-8 : 2009

Electrical

Power supply 8~35VDC / 12~30VAC

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

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

Electrical connection M12 metal connector with 2 m cable
or terminal (cable gland)

Protect degree housing : IP65 ; probe : IP 20

Electric protection ☉Polarity protection ☉over-voltage ☉short-circuit

Installation PC probe : Plastic flange (standard)

Housing PC fire-proof class (PC-110) (UL94V-2)

Probe PC fire-proof class (PC-110) / S.S. (SUS304)

Physical Quantity Measuring Range List

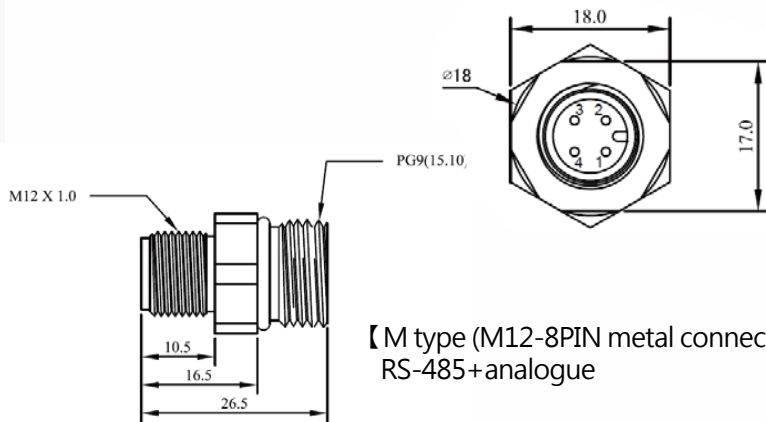
※ Beside temp. & dew point, other physical quantities range as default setting

Physical quantity	THS301 indoor PC probe	THS302 duct PC probe	THS303 duct S.S. probe	THS304 remote PC probe + PVC cable	THS305 remote PC probe + TEFLON cable	THS306 remote S.S. probe + TEFLON cable	THS307 outdoor PC probe + shield
Temperature (T)	0~50°C	-40~+100°C	-40~+120°C	-40~+80°C	-40~+100°C	-40~+150°C	-40~+80°C
Humidity (H)	0~100%RH						
Dew Point (D)	-40~+50°C	-40~+60°C					
Frost Point (F)	-40~0°C						
Wet-bulb temp. (W)	0~50°C	0~100°C		0~80°C		0~100°C	0~80°C
Vapor Pressure (E)	0~150mbar	0~1100mbar		0~500mbar		0~1100mbar	0~500mbar
Mixture Ratio (R)	0~100g/kg	0~999g/kg		0~600g/kg		0~999g/kg	0~600g/kg
Absolute Humidity (V)	0~100g/m ³	0~700g/m ³		0~300g/m ³		0~700g/m ³	0~300g/m ³
Specific Enthalpy (S)	0~300kJ/kg	0~2800kJ/kg		0~1600kJ/kg		0~2800kJ/kg	0~1600kJ/kg

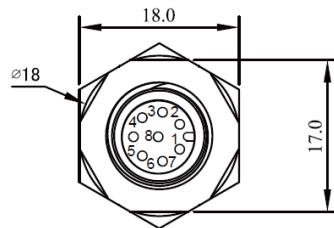
Electric Connector

unit : mm

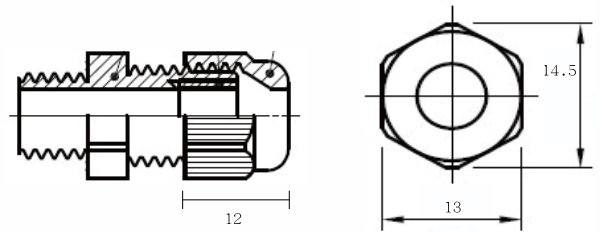
【 M type (M12-4PIN metal connector) 】
RS-485 or analogue



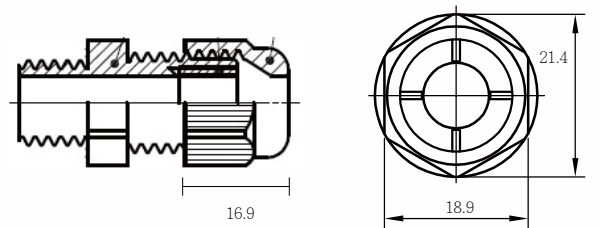
【 M type (M12-8PIN metal connector) 】
RS-485+analogue



【 N type (M12 cable gland) 】 RS-485 or analogue

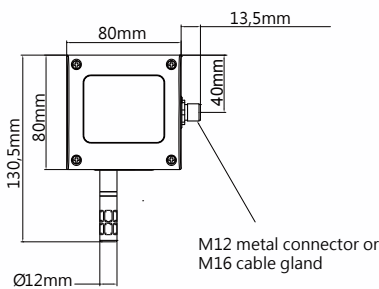


【 N type (M16 cable gland) 】 RS-485+analogue

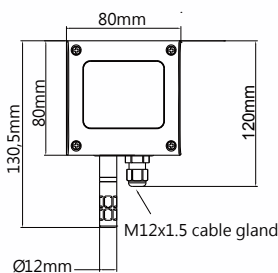


Dimension

【 TH301(indoor) – PC probe 】

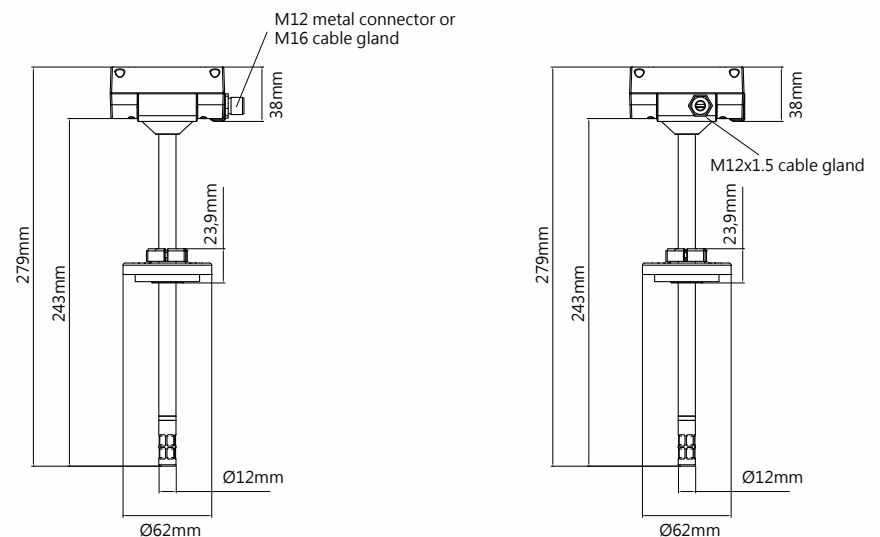


M type (4P) : RS-485 or analogue
M type (8P) or N type : RS-485 + analogue



N type : RS-485 or analogue

【 THS302(duct) – PC probe 、 standard plastic flange 】

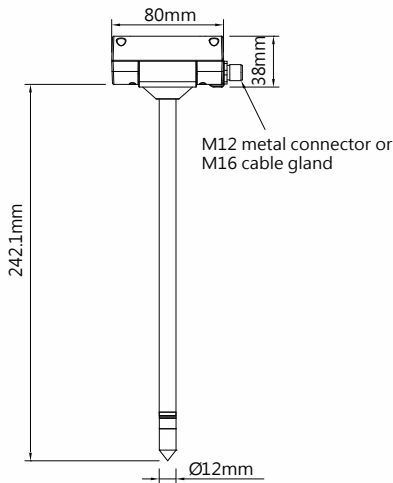


M type (4P) : RS-485 or analogue
M type (8P) or N type : RS-485+analogue

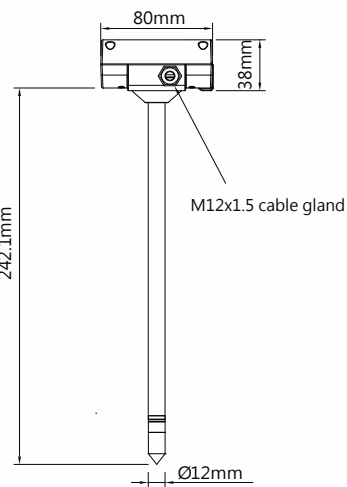
N type : RS-485 or analogue

Dimension

【THS303 duct – S.S. probe】

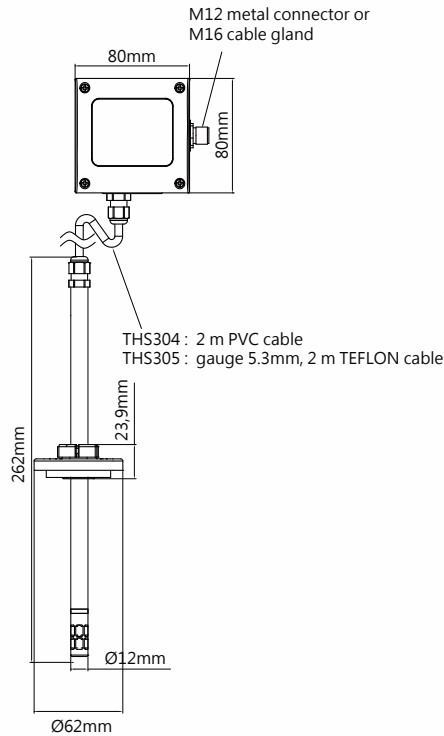


M type (4P) : RS-485 or analogue
M type (8P) or N type : RS-485+ analogue

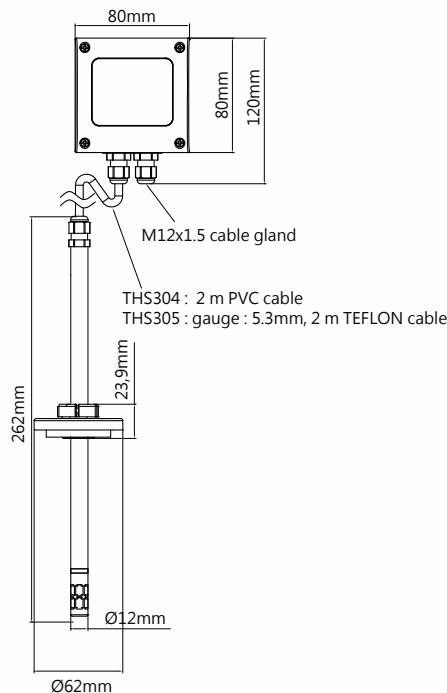


N type : RS-485 or analogue

【THS304/THS305 remote
– THS304 : PC probe+2 m PVC
– THS305 : PC probe+2 m TEFLON
– standard : plastic flange】

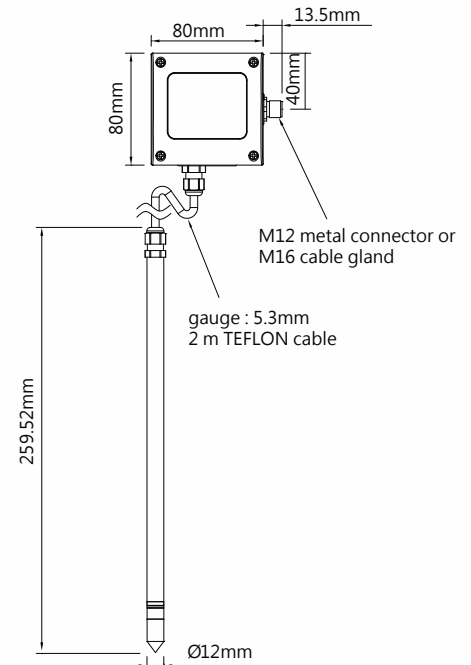


M type (4P) : RS-485 or analogue
M type (8P) or N type : RS-485+ analogue

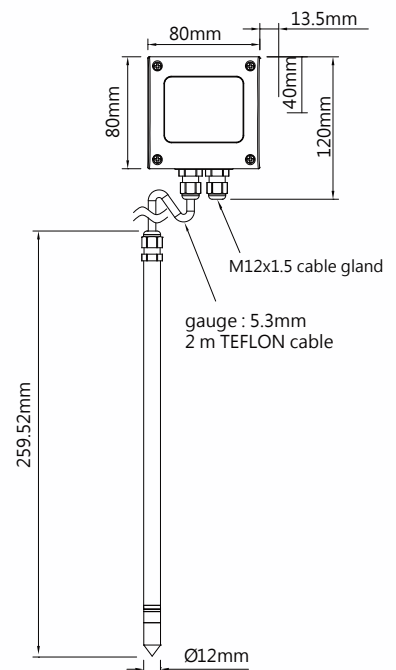


N type : RS-485 or analogue

【THS306 remote
– S.S. probe+ 2 m TEFLON2】



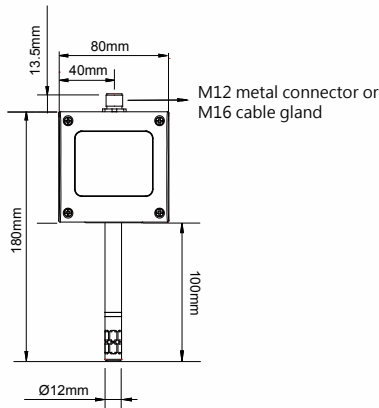
M type (4P) : RS-485 or analogue
M type (8P) or N type : RS-485+ analogue



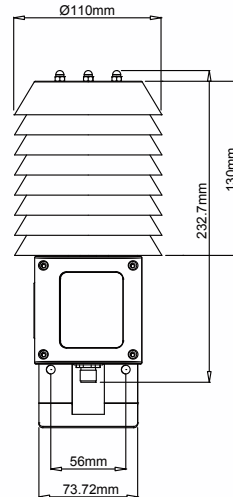
N type : RS-485 or analogue

Dimension

【 THS307 outdoor – PC probe+shield 】

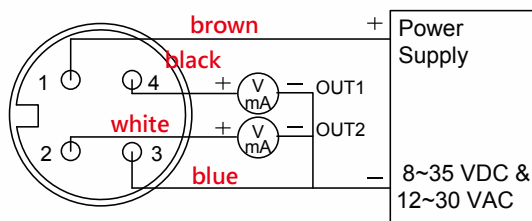


M or N type : RS-485+analogue



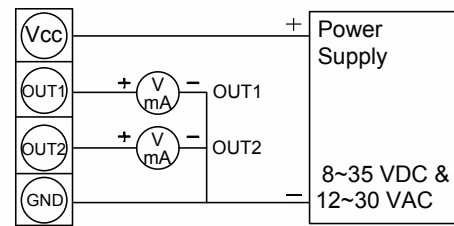
N type : RS-485 or analogue

Analogue Diagram



M12 connector

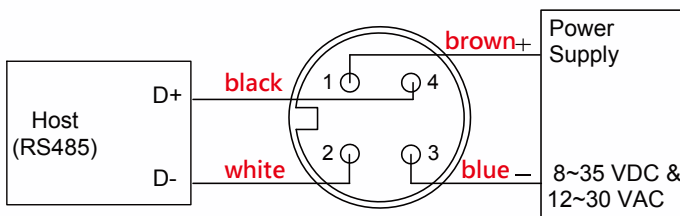
M type (4P)



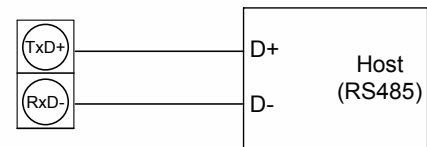
4P terminal

N type

RS-485 Diagram



M type (4P)

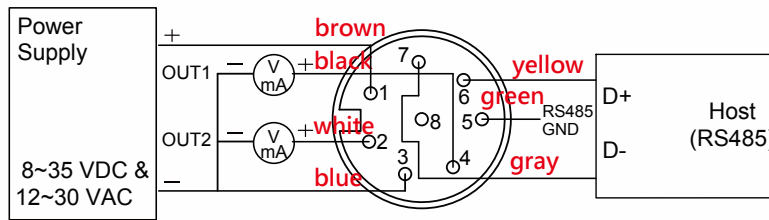


RS-485 Signal connector

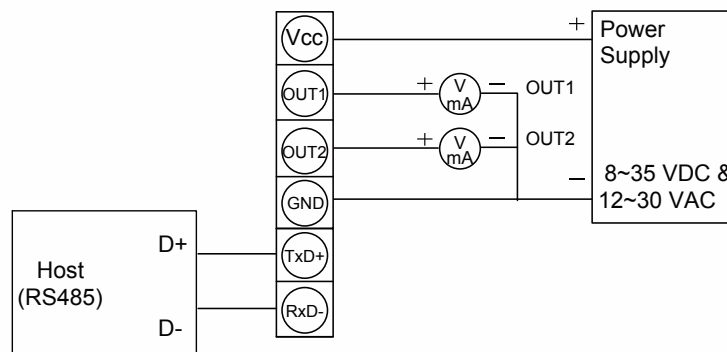
N type

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

Analogue + RS-485 Diagram

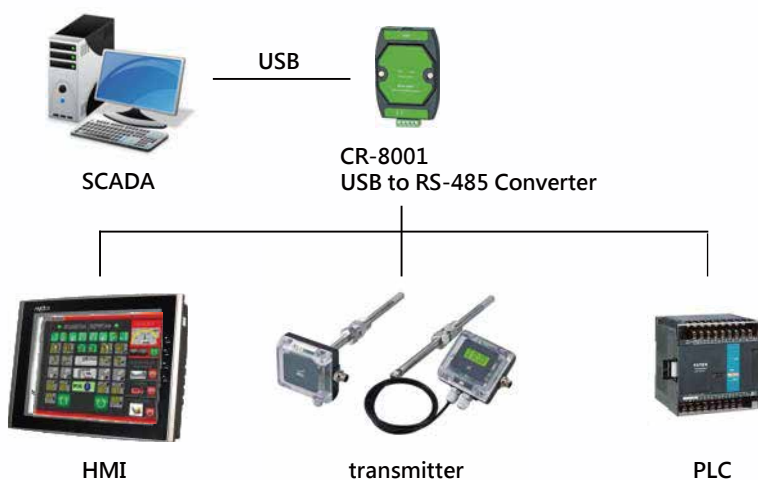


M type (8P)



N type (M16)

USB to Isolated RS-485 Application



- ※ Device
 1. PC
 2. RS-485 to USB Converter
 3. power supply
 4. UI software
- ※ option converter: CR-8001
- ※ free programmable software

Ordering Guide

type	THS30	4	—	H	00	1	D	14	1	—	D	M	P	2	U
installation	indoor duct (PC probe) duct (S.S. probe) remote (PC probe, PVC cable) remote (PC probe, TEFLON cable) remote (S.S. probe, TEFLON cable) outdoor (PC probe, shield)	1 2 3 4 5 6 7	— — — — — — —												
physical quantity output 1 * please refer to physical quantity measuring range list	humidity temperature dew point frost-point wet-bulb temperature vapor pressure mixture ratio absolute humidity specific enthalpy RS-485 (default temperature)			H T D F W E R V S N											
physical quantity scale 1	0 ... 50°C 0 ... 80°C 0 ... 100°C 0 ... 120°C 0 ... 180°C -20 ... +40°C -40 ... +60°C -40 ... +120°C -40 ... +180°C as physical quantity measuring range list (H, F, W, E, R, V, S, RS-485) special range				30 38 40 42 48 13 14 16 18 00 YY										
signal output 1	4 ... 20 mA 0 ... 20 mA 0 ... 10 V 0 ... 5 V 0 ... 1 V RS-485					1 2 6 7 8 9									
physical quantity output 2 * please refer to physical quantity measuring range list	humidity temperature dew point frost-point wet-bulb temperature vapor pressure mixture ratio absolute humidity specific enthalpy RS-485 (default humidity)			H T D F W E R V S N											
physical quantity scale 2	0 ... 50°C 0 ... 80°C 0 ... 100°C 0 ... 120°C 0 ... 180°C -20 ... +40°C -40 ... +60°C -40 ... +120°C -40 ... +180°C as physical quantity measuring range list (H, F, W, E, R, V, S, RS-485) special range				30 38 40 42 48 13 14 16 18 00 YY										
signal output 2	4 ... 20 mA 0 ... 20 mA 0 ... 10 V 0 ... 5 V 0 ... 1 V RS-485							1 2 6 7 8 9							
display	yes no										D X				
electric connector	plastic cable gland M12 metal connector (with 2 m cable)											N M			
filter	PC membrane filter (standard : PC probe) sintered filter (standard : S.S. probe) S.S. Metal grid filter with mesh PC membrane filter + Metal mesh												P S M G		
remote cable (max. length : 10 m)	standard 2 m PVC or TEFLON cable 5 m other length													2 5 —	
option / other request	other request (quote as demand) RS-485 + analogue														W U