



THS30X series (THS301/302/303/304/305/306/307)

Multifunction Temperature & Humidity Transmitter (Indoor/Duct/Remote/Outdoor)



THS301-indoor
0~50°C



THS302-duct
-40~+100°C



THS303-duct
-40~+120°C



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



THS306-remote
cable:TEFLON
-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
- MODBUS RS-485 with 2 kinds of analogue output
- Probe : PC or S.S. ; Remote type : PVC or TEFLON
- 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 A class

Working Range Suggest

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

Signal Connection 3-wire

MODBUS RS-485(Programmable)

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 0.05%RH/°C

Load Resistance Current output : max. 500Ω /
 Voltage output : min. 10KΩ

Output calibration (ZERO & SPAN) Software setting

adjustment range

Response time t90 (temp. at +25°C) <20S(membrane filter) ; < 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

Bearable 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 - 4 PIN M12 metal connector with 2 m cable
 or N (plastic cable gland)

Signal RS-485 : 2P terminal

Protect degree body : IP65 ; probe : IP 20

Electric protection ◎Polarity protection ◎over-voltage ◎over-voltage

Installation PC probe : Plastic flange (standard)

Housing PC fire-proof class(PC-110)

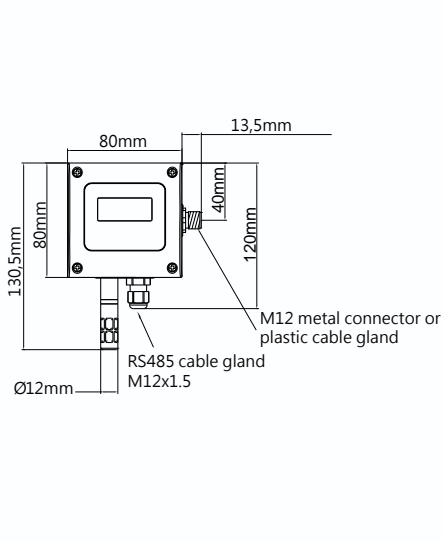
Probe PC fire-proof class(PC-110) / S.S. (SUS304)

Physical Quantity Measuring Range List

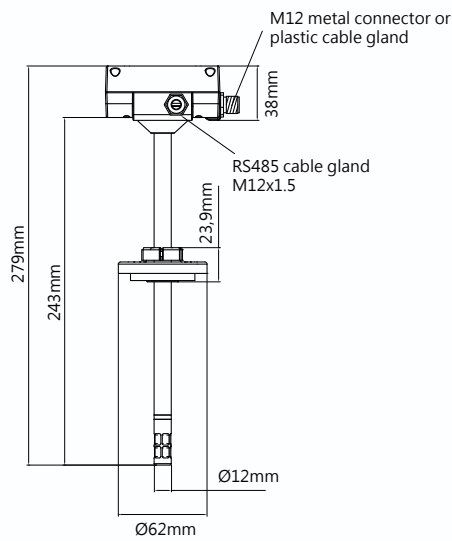
※ Beside temperature, other physical quantities range as default setting

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 + sheild)
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	0~100mbar		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

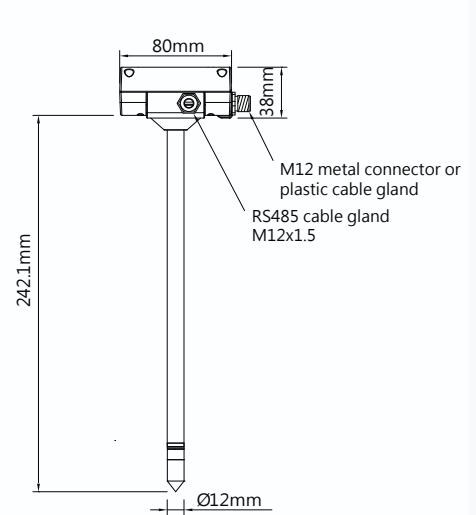
Dimension



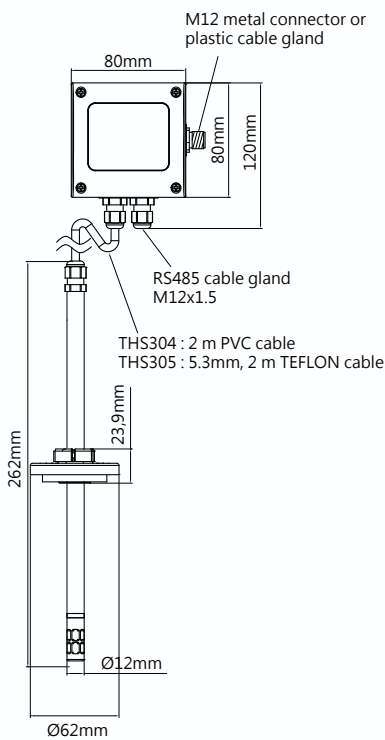
THS301(indoor)
- PC probe



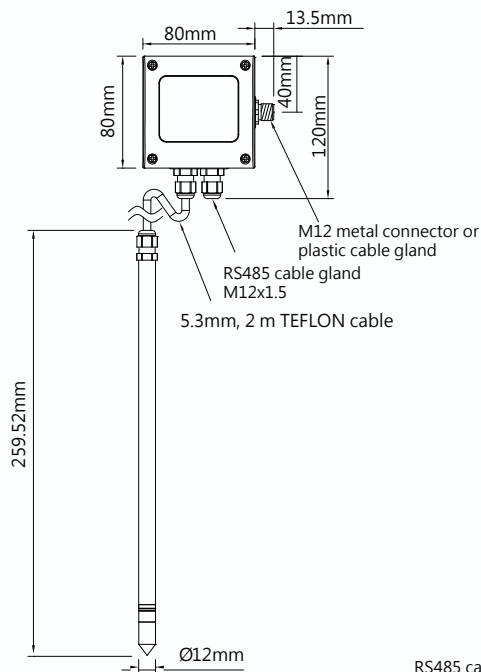
THS302(duct)
- PC probe
- standard : plastic flange



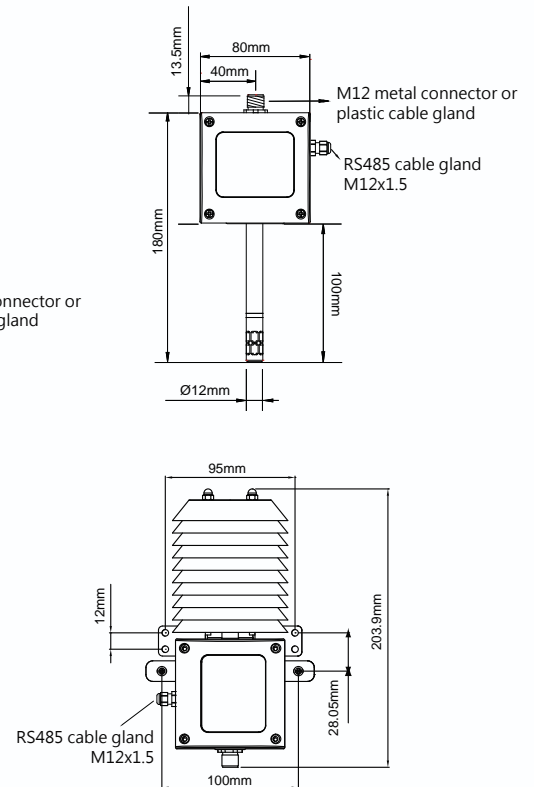
THS303(duct)
- S.S. probe



THS304/THS305(remote)
- THS304 : PC probe+2 m PVC cable
- THS305 : PC probe+2 m cableTEFLON
- standard : plastic flange



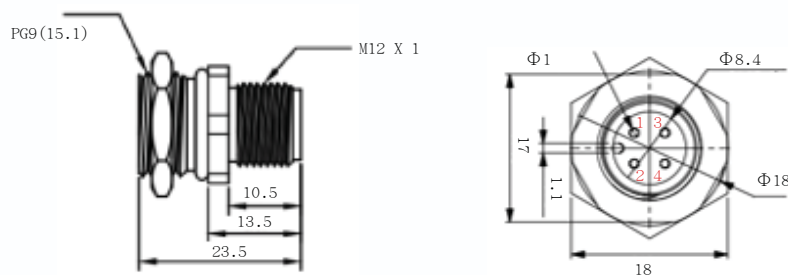
THS306(remote)
- S.S. probe+
2 m TEFLON cable



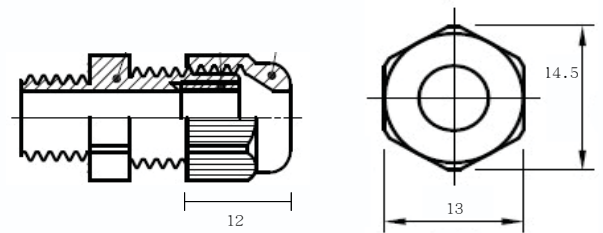
THS307(outdoor)
- PC probe+shield

Electric Connector

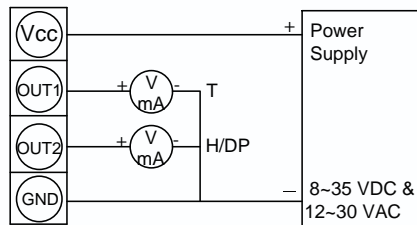
【 M type (M12-4 PIN metal connector) 】



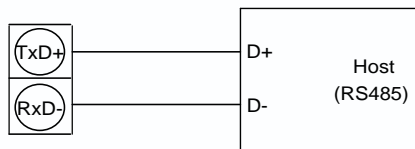
【 N type (plastic cable gland) 】



Signal Connector

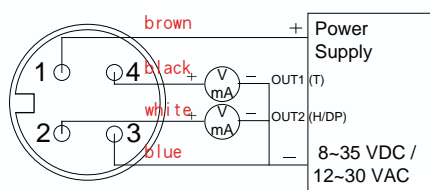


4P terminal

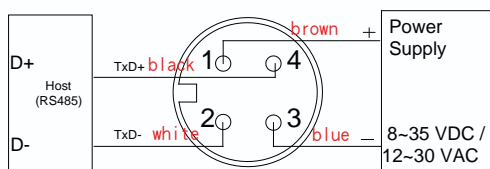


RS485 Signal connector

Connection Diagram

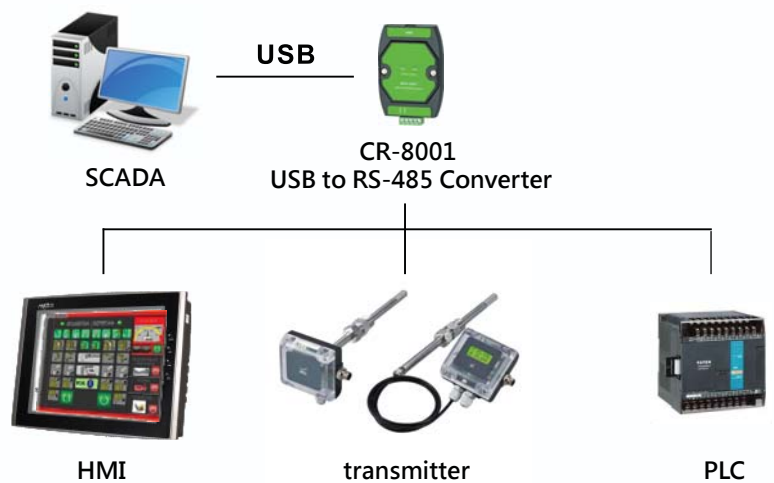


M12 connector



RS-485, M12, 4P

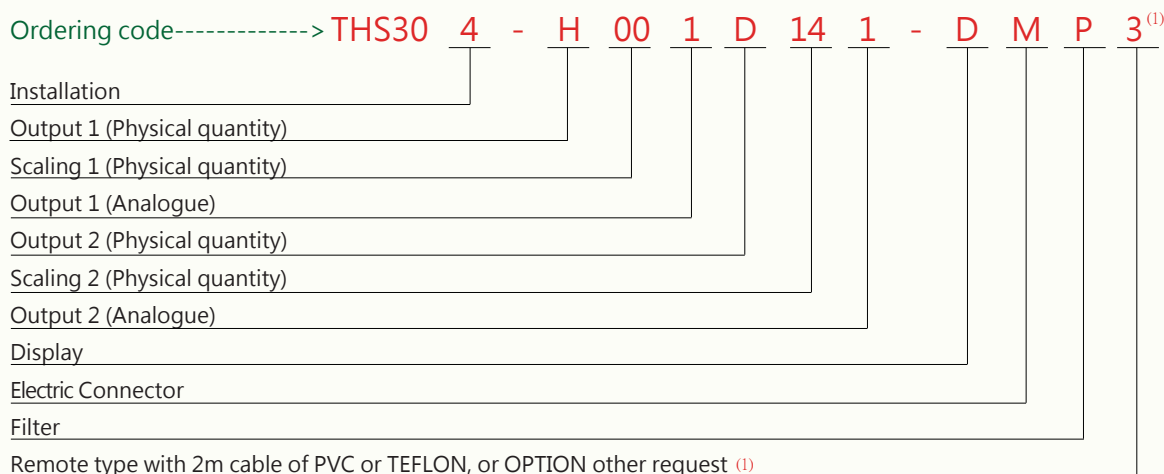
USB to Isolated RS485 Application



※ option converter: CR-8001

※ EYC free programmable software : <http://www.eyc-tech.com/download/download149.html>

Ordering Guide



【Ordering item】

Installation	code	Output 1 (physical quantity)	code	Scale 1 (physical quantity) ⁽²⁾	code	Output 1 (Analogue)	code
indoor	1	※please refer to physical quantity measuring range list		0~50 °C	30	4~20mA	1
duct (PC probe)	2	humidity	H	0~80 °C	38	0~20mA	2
duct (S.S. probe)	3	temperature	T	0~100 °C	40	0~10V	6
remote (PC probe, PVC cable)	4	dew point	D	0~120 °C	42	0~5V	7
remote (PC probe, TEFLON cable)	5	frost-point	F	0~180 °C	48	0~1V	8
remote (S.S. probe, TEFLON cable)	6	wet-bulb temperature	W	-20~+40 °C	13	standard : RS-485 ⁽³⁾	9
outdoor (PC probe, Shield)	7	vapor pressure	E	-40~+60 °C	14		
		mixture ratio	R	-40~+120 °C	16		
		absolute humidity	V	-40~+180 °C	18		
		specific enthalpy	S	as physical quantity measuring range list (H, F, W, E, R, V, S)	00		
				special range	YY		

Output 2 (physical quantity)	code	Scale 2 (physical quantity) ⁽²⁾	code	Output 2 (Analogue)	code	Display	code	Electric connector	code
※please refer to physical quantity measuring range list		0~50 °C	30	4~20mA	1	yes	D	plastic cable gland	N
humidity	H	0~80 °C	38	0~20mA	2	no	X	M12 metal connector	M
temperature	T	0~100 °C	40	0~10V	6			(standard : 2m cable)	
dew point	D	0~120 °C	42	0~5V	7				
frost-point	F	0~180 °C	48	0~1V	8				
wet-bulb temperature	W	-20~+40 °C	13	standard : RS-485	9				
vapor pressure	E	-40~+60 °C	14						
mixture ratio	R	-40~+120 °C	16						
absolute humidity	V	-40~+180 °C	18						
specific enthalpy	S	as physical quantity measuring range list (H, F, W, E, R, V, S)	00						
		special range	YY						

Filter	code
PC membrane filter (standard : PC probe)	P
sintered filter (standard : S.S. probe)	S
S.S. Metal grid filter with mesh	M
PC membrane filter + Metal mesh	G

Remote type ⁽¹⁾	code
cable length (max. 10 m) or OPTION	
standard : 2 m cable of PVC or TEFLON	2
5m	5
other length	—
other request (charge for demand)	W

» NOTICE :






(1) remote type : need to order as requested cable length or other demand

(2) default setting : please refer to page 2 , physical quantity measuring range list (H, F, W, E, R, V, S).


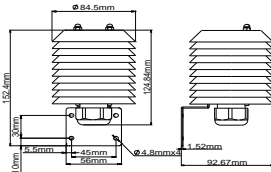
(3) standad : RS-485 with 2 kinds of analogue output

Option List


– Filter > Please choose the fit filter to protect sensitive components according to the using environment.

Product	Order No./Name	Statement	Feature
	8203104010 PC membrane filter for THS series	Material: PC fire-proof class + cotton filter Outside diameter:12mm Length:32mm	- common filtering effect - max. temp. : 80°C
	4425000013 SUS sintered filter for THS series (40 μm, SUS316L, Φ 12*32m)	Material: SUS sintered filter for THS series Aperture:40 μm Outside diameter:12mm Length:38mm	- resist pressure, pollution and corrodent - nice filtering ability - max. temp.:200°C
	4415000020 Metal grid filter without mesh for THS series	Material: Metal grid filter without mesh for THS series Outside diameter:12mm Length:32mm	- no protection ability - react quickly - endure high temp. - nice ventilation - max. temp.:200°C
	8203104011 Metal grid filter with mesh for THS series	Material: Metal grid filter with mesh for THS series Outside diameter:12mm Length:32mm	- common resisting pollution - react quickly - endure high temp. - nice ventilation - max. temp.:200°C
	8203104013 PC membrane filter + Metal mesh for THS series	Material: PC fire-proof class+ Metal mesh for THS series Outside diameter:12mm Length:32mm	- fitting in with high humidity environment - max. temp.:200°C

- Shield


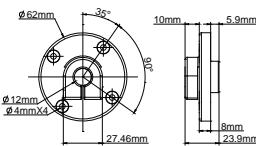

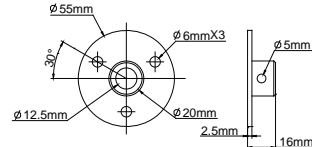

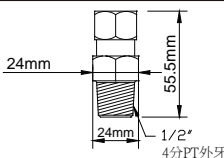

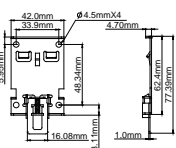

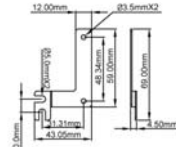
Product	Order No./Name	Size	Feature
	THSA-0303 Shield: PC, Radiation shield (THS/TH)		Material: PS+SPCC Fit products: TH/THS series-duct / remote

- M (electronic connection cable)


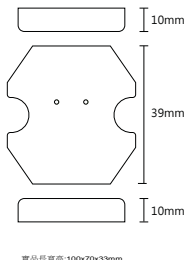
Product	Order No./Name	Statement	Feature
	M12-F4N-200 M12 Waterproof Length:2m	Female connection : 4 PIN Material:PC oil-proof 4 X 0.3mm	Working voltage:250VAC/300VDC Working current:4A Working temp. :-20~+85°C Waterproof degree:IP67 Thermal limit:105°C Mobile resistant cable
	M12-F4N-500 M12 Waterproof Length:5m		

OPTION LIST

— Installation

Product	Order No./Name	Size	Feature
	542500009 Plastic flange		Material: PC fire-proof class For THS & FTS series
	441500022 Metal mounting flange		Material: SUS304 (φ 12xH18.5mm) Fitting products: THS64/65/74/75 series
	8203104012 Installation: Fitting thread		Material: SUS304 Fitting products: THS & FTS series
	HS-S Installation: Fixed board		Material: SUS304 Fitting products: THS/FTS/GS/GM series indoor/remote type
	443500005 L board Fixed board		Material : SPCC+Zinc plated Fitting products: THS/FTS/GS/GM series indoor/remote type

- Converter

Product	Order No./Name	Size	Feature
	CR-8001 USB to Isolated RS485 Converter		No External Power Supply required Fully Compliant with the USB 1.1/2.0 (High Speed) 3000 VDC Isolation Protection on the RS-485 side ESD Protection for the RS-485 & USB Data Line Automatic RS-485 Direction Control Driver Supports : Windows XP/Vista (32/64-bit)/7 (32/64-bit)/Linux/Mac