

Multi-function Humidity and Temperature Transmitter

TH21 (Wall mount)



TH22 (Duct version)



TH23 (Remote probe)



Temperature and Humidity transmitter meets the harsh environmental requirements for temperature and humidity measurement. Via temperature and relative humidity values, the output can be calculated dew point temperature, absolute humidity, wet bulb temperature, the specific enthalpy and other parameters of humidity.

Parameter values measured through the two analog output channels, the output may be a current or voltage output. You can simply establish a network by RS485 connection to achieve remote monitoring and data logging, measurement data through the storage device for analysis and processing.

Touch buttons without having to open the housing can be set a one point adjustment for temperature and humidity, output selection, range setting, adjustment parameters.

Features

- Metal probe reduce electromagnetic interference
- Probe pressure up to 10 bar
- Display and touch buttons for convenient operation
- IP-65 housing
- 1-point user adjustment
- Analog output and RS485
- Alarm output
- Dip switch setting
- Configure adapter support



LCD DISPLAY

Industrial-grade specifications provide 20 ... 70 ° C temperature working range, it can be reliably display measured values in harsh demanding environments. 128X64 image pixel can clearly show the measured values on large font, or it can display three measured values simultaneously.

DIP SWITCH

DIP switch on the PCB board involves the most common configuration options, so adjust the parameters will having the maximum convenience.

OUTPUT

2-wire or 3-wire 4 - 20mA
0 ... 1V / 5V / 10V
RS485 MODBUS RTU

ALARM OUTPUT

Use function with relay outputs (option) can be realized switch alarm and control, it can easily complete the set points via LCD display and touch buttons. 8A ac current capacity, so that the control can be more free.

CONFIGURE ADAPTOR

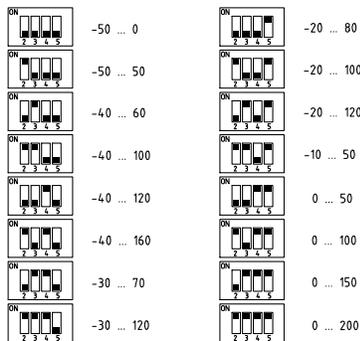
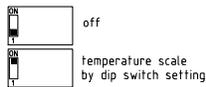
Configure adaptor can set measuring type, measuring scale, output type, alarm point, RS485 parameters, as well as a one point temperature and humidity adjustment in the measuring field **without having to use a computer.**

Applications

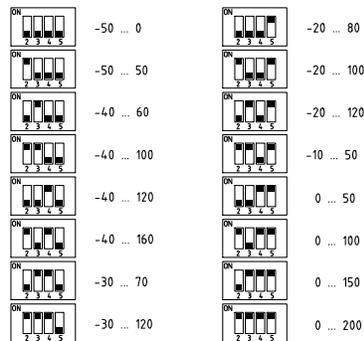
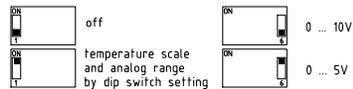
- Semiconductor and microelectronics industry
- Pharmaceutical industry, paper industry
- Agriculture, farms
- Building Automation
- Environment and ventilation control

DIP SWITCH

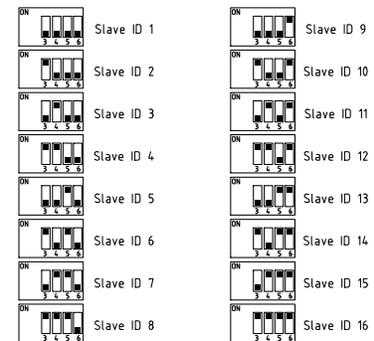
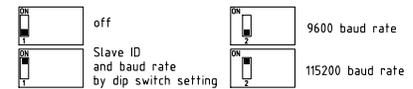
4...20mA version



Voltage version

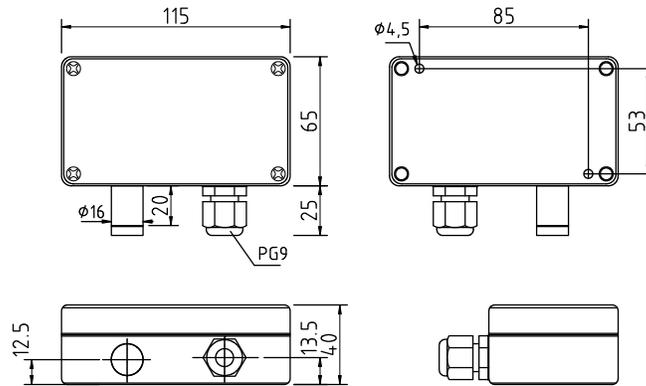


RS485 version

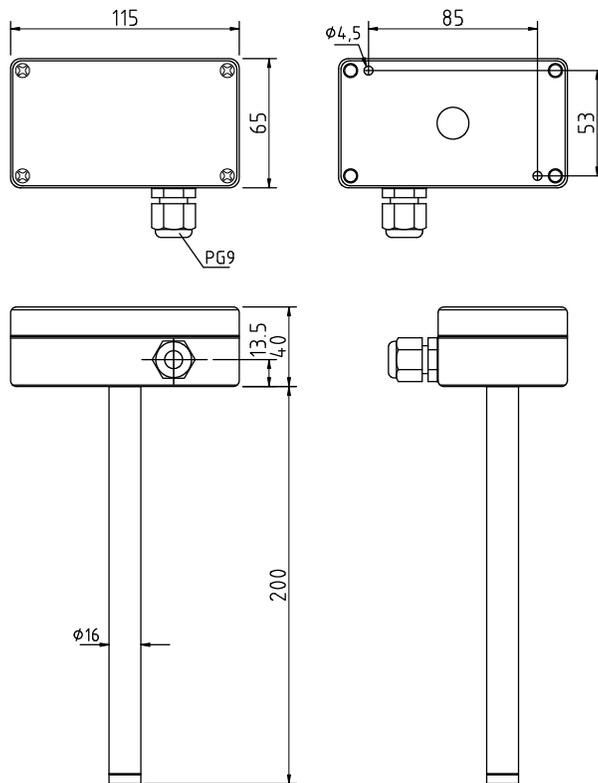


DIMENSIONS (mm)

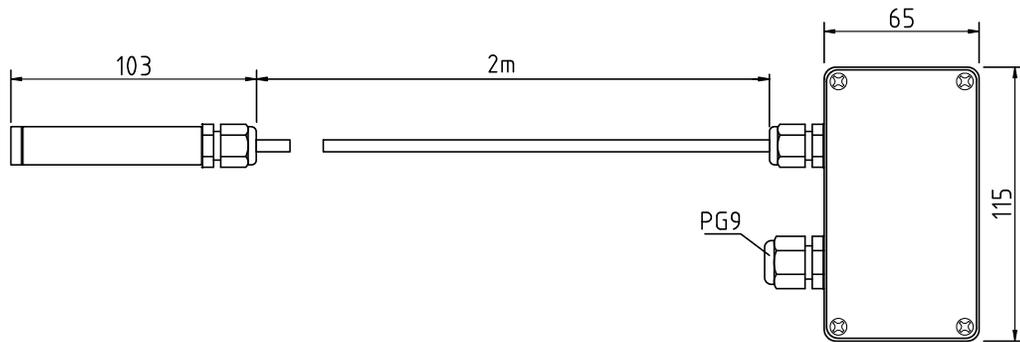
TH21 Wall mount version (Probe material: brass nickel-plated)



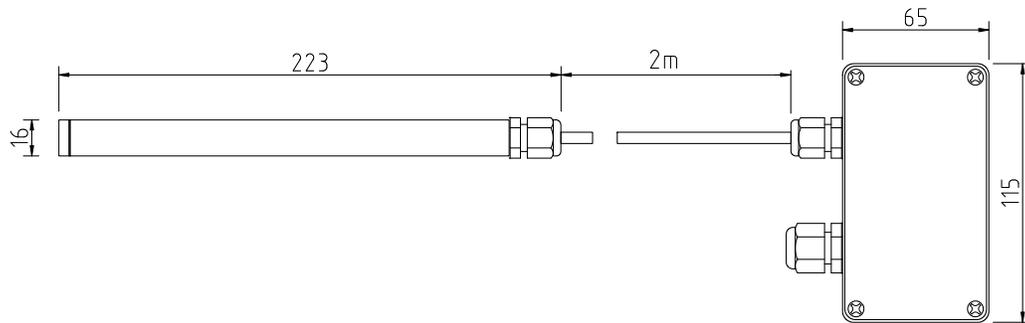
TH22 Duct version (Probe material: aluminum)



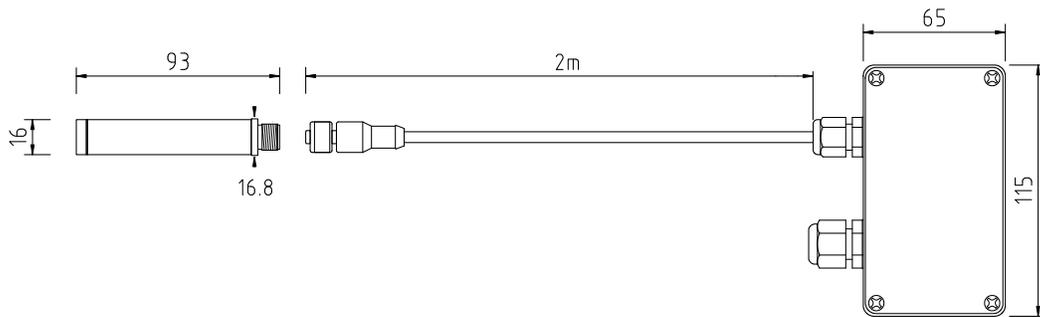
TH23A Remote probe (Probe material: brass nickel-plated)



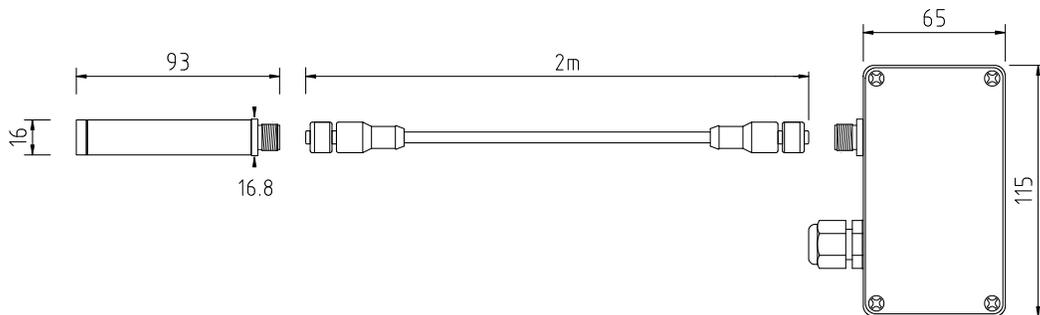
TH23B Remote probe (Probe material: aluminum)



TH23C Remote probe with M12connector (Probe material: brass nickel-plated)



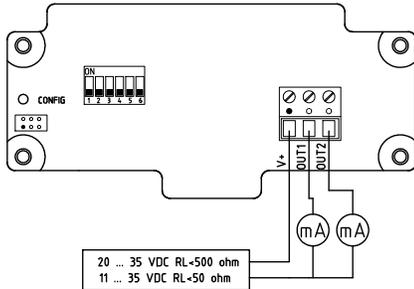
TH23D Remote probe with dual M12connector (Probe material: brass nickel-plated)



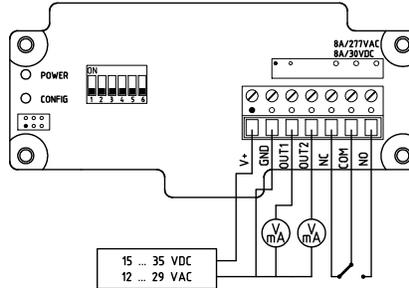
CONNECTION DIAGRAM

Cable gland with terminal block

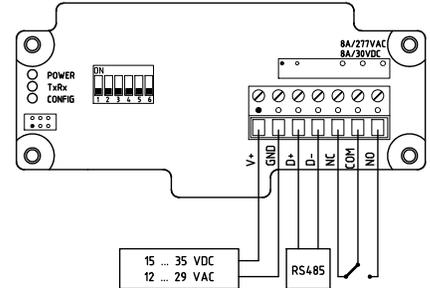
2-wire 4...20mA output
(OUT1 must be connected)



3-wire 4...20mA or voltage output

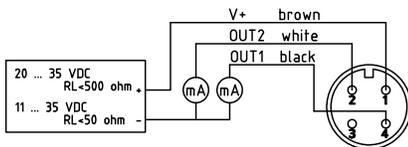


RS485 output

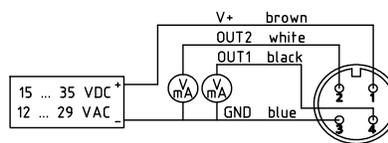


M12 – 4 pin connector

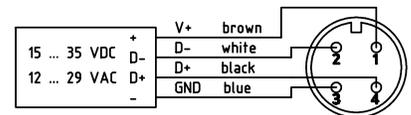
2-wire 4...20mA output
(OUT1 must be connected)



3-wire 4...20mA or voltage output



RS485 output



PHYSICAL QUANTITY OUTPUT RANGE

	Metric	Imperial
- Temperature <u>I</u>	-40 - 120 °C	-40 - 248 °F
- Relative Humidity <u>RH</u>	0 - 100 %	0 - 100 %
- Dew point <u>Td</u>	-20 - 100 °C	-4 - 212 °F
- Frost / dew point <u>Tf</u>	-20 - 100 °C	-4 - 212 °F
- Wet bulb temperature <u>Tw</u>	-40 - 100 °C	-40 - 212 °F
- water vapor pressure <u>E</u>	0 - 1013 mbar	0 - 14.7 psi
- Mixing ratio <u>R</u>	0 - 30000 g/kg	0 - 210000 gr/lb
- Absolute humidity <u>A</u>	0 - 550 g/m ³	0 - 240 gr/ft ³
- Enthalpy <u>S</u>	-40 - 40000 kJ/kg	-10 - 20000 BTU/lb

TECHNICAL DATA

Humidity

Measurement range.....	0 - 100 %RH
Accuracy (including non-linearity, hysteresis, and repeatability)	
A class	±1.5%RH@25°C (20 - 80%RH) ±2%RH@25°C (0 - 20/80- 100%RH)
B class	±2%RH@25°C (20 - 80%RH) ±3%RH@25°C (0 - 20/80 - 100%RH)
Temperature coefficient(from 0°C to 80°C) typ.	±0.02%RH/°C
Humidity Hysteresis	±1%RH
Recovery time after 150 hours of condensation	10 second
Long term drift	< 0.25%RH/year
Response Time (at 63% of signal) from 33 to 75%RH	10 second (at 1m/s air flow)

Temperature

Measurement range	-40 - 120 °C
Accuracy (including non-linearity, hysteresis, and repeatability)	±0.2°C±0.003*T@25°C ±0.7°C (-40 - 5°C) ±0.3°C (5 - 60°C) ±0.9°C (60 - 120°C)
Long term drift	< 0.02°C/year

Analog output (two channels)

Current version	2-wire or 3-wire, 4 -20 mA
Voltage version	0 - 1 V / 5 V / 10 V
Accuracy of analog outputs at +25 °C	±0.1% full scale
Temperature dependence	±0.005%/°C full scale
External loads	current output RL < 500 ohm voltage output 0 ... 1 V output RL > 2k ohm 0 - 5 V and 0 - 10 V outputs RL > 10k ohm

RS485 Modbus RTU

ID	1 - 247
Baud rate	9600/19200/38400/57600/115200
Data format	N81/N82/E81/E82/O81/O82

Psychometric calculations (option)

(Td) dew point temperature, (A) absolute humidity, (Tf) frost/dew point temperature, (R) mixing ratio, (S) enthalpy, (Tw) wet bulb temperature, (E) water vapor pressure

Display with touch button (option)

LCD	128x64 dots without backlight
Lines	1,2 or 3
Buttons	capacitive *3

Alarm (option)

Relay type	Electromagnetic
Contact	SPDT / 8A / 277 VAC (resistive load)
Activate	Increasing / Decreasing
Set-point	-9999 to 9999
Hysteresis	0 to 9999
Delay	0 to 3600 second
Latch	on/off

Power supply

2-wire current version	11 ... 35 VDC RL<50 ohm 20 ... 35 VDC RL<500 ohm
3-wire current version	15 ... 35 VDC, 12 ... 29 VAC
Voltage version	15 ... 35 VDC, 12 ... 29 VAC
RS485 version	15 ... 35 VDC, 12 ... 29 VAC

Power consume (25 °C, V+ 24 VDC)

Current version	max. 40mA
Voltage version	typ. 10mA
Voltage version + alarm	typ. 25mA
RS485 version	typ. 25mA
RS485 version + alarm	typ. 40mA

Mechanics

Cable gland	PG9 with strain relief
Cable bushing	4.5 ... 8.2 mm/0.18" ... 0.32"
Housing material	PC, POLYCARBONATE
Housing classification	IP65
Probe pressure	10bar
Terminal block	AWG 12...24
Cable of remote probe version	2m, shield PVC, 80 °C
Connection	Cable gland w/ terminal block or M12-4 pin

Probe material

Wall mount version	brass nickel-plated
Duct version	aluminum
Remote probe version	brass nickel-plated/aluminum

Temperature range

without display	-40 - 80 °C (-40 - 176 °F)
with display	-20 - 70 °C (-4 - 158 °F)

Probe temperature range

Duct and remote probe version -40 - 120 °C (-40 - 248 °F)

Electromagnetic compatibility

Complies with EMC standard
EN61326-1, Industrial Environment

Ordering Guide

Model – Humi. Accuracy – Output – Connection – (Option)
 (1) (2) (3) (4)

Model (1)	Humi. Accuracy (2)	Output (3)	Connection (4)
TH21 Wall mount	(A) <u>A class</u>	2-wire 4-20mA* (2)	Cable gland (A)
TH22 Duct	±1.5%RH@25°C (20 -80%RH)	3-wire 4-20mA (7)	M12-4 pin (B)
TH23A Remote probe	±2%RH@25°C (0-20 / 80-100%RH)	0 - 10V (3)	(with 2m cable)
TH23B Remote probe	(B) <u>B class</u>	0 - 5V (5)	
TH23C Remote probe	±2%RH@25°C (20- 80%RH)	0 - 1V (6)	
TH23C Remote probe	±3%RH@25°C (0 -20 / 80 - 100%RH)	RS485 (4)	

Psychometric calculations (Option)	Display with touch button (Option)	Alarm (Option)
None (Temp. /Humi.) Yes (M) Analog (only two option) RS485 (Include all option) Temperature (T) Relative Humidity (RH) Dew point (Td) Frost / dew point (Tf) Wet bulb temperature (Tw) Water vapor pressure (E) Mixing ratio (R) Absolute humidity (A) Enthalpy (S)	Yes (D)	Yes (R)

*2 wire 4 - 20mA version without Alarm option

Accessories

PT-TH20-1 Stainless steel sintered, pores size: 30µm		PT-TH20-4 NPT1/2" stainless steel sample block with NPT1/4" inlet & outlet ports	
PT-TH20-2 Stainless steel mesh, pores size: 75µm		PT-TH20-5 NPT 1/2" Stainless steel fitting	
PT-TH20-3 Wall mounting clip		PT-TH20-6 Configure adapter	