control solutions
TERACOM

TSH206v3.x
Humidity and temperature sensor



Short description

TSH206v3.x is a humidity and temperature sensor with a 1-Wire interface.

The device integrates sensing elements and signal processing to provide a fully calibrated digital output. A capacitive sensing element is used for measuring relative humidity, while temperature is measured by a band-gap sensor. Both sensors are coupled to a 12-bit analog-to-digital converter. This results in high signal quality and fast response time.

The sensor is supplied with a one-meter cable with RJ12 connectors. A 19" rack-mount kit can be ordered separately.

Applications

- Server room and data center monitoring.
- Humidity and temperature monitoring in facilities, vineyards, greenhouses, etc.
- Environmental quality monitoring and assessment.
- Humidity and temperature monitoring in building management systems.

Technical parameters

Parameter	Value	Units	Remark	Value	Units	Remark
Operating range	10 to 90*	%RH	non-condensing	–20 to +60*	°C	
Tolerance, typ.	±3.0	%RH	20 to 80 %RH	±0.4	°C	-10 to +60°C
Tolerance, max.	±5.0	%RH	10 to 90 %RH	±1.0	°C	-20 to +60°C
Long term drift, typ.	±0.25**	%RH/year	20 to 80 %RH	±0.05**	°C/year	-10 to +60°C
Resolution	0.1	%RH		0.1	°C	
Power supply/consumption	4.0 to 5.5	VDC	From 1-Wire bus	5	mA	
Ingress protection	IP20					
Dimensions	85 x 35.1 x 23.5	mm				
Connectors	Two RJ11 connectors in parallel					

* Recommended operating range is 20% to 80% RH (non-condensing) over -10°C to +60°C.
Prolonged operation beyond these ranges may result in a shift of sensor readings, with slow recovery time.

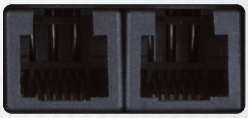
** Higher drift values might occur in contaminated environments with vaporized solvents, out-gassing tapes, adhesives, packaging materials, etc.

Usage

Can be used with following TERACOM controllers

- TCW241
- TCW210-TH
- TCW220
- TCG140-4

Pinout



Pin	Description	Corresponding UTP wire color
1	1-Wire GND	White/Brown
2	1-Wire GND	White/Green
3	1-Wire Data	Green
4	1-Wire GND	White/Orange
5	1-Wire +VDD	Orange
6	1-Wire +VDD	Brown

Status indicator

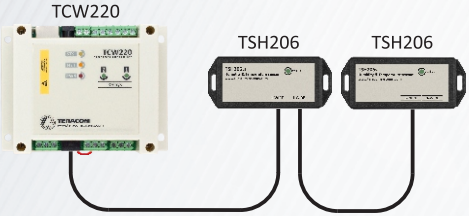
The device status is indicated by a single LED located on the front panel:

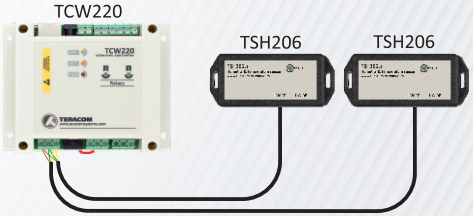
- If the LED blinks once per second, the sensor operates normally;
- If the LED blinks once every 3 seconds, there is no communication with the controller;
- If the LED does not blink, there is no power supply.

Installation

It is strongly recommended to use only UTP/FTP cables. Daisy-chain (linear) topology is strongly recommended for multiple sensors. The total cable length can be up to 30 meters.

"Star" topology should be used only as a last resort, for up to 4 sensors and a total cable length of up to 10 meters.





Installation tips

The location and mounting position of the sensors have a direct effect on the accuracy of room temperature and humidity monitoring. The tips below will help ensure accurate measurements:

- Sensor shall be installed about 1.2-1.4 m above the floor;
- Sensor should not be installed next to windows to avoid solar radiation;
- Sensors shall be installed in a place with sufficient air circulation;
- Sensors should be wall-mounted with the vent holes oriented vertically to ensure air circulation.

1-Wire Bus

1-Wire is a registered trademark of Maxim Integrated Products, Inc., now part of Analog Devices. We recommend reading the 1-Wire guidelines at https://www.teracomsystems.com/wp-content/uploads/1-wire/guidelines-for-reliable-long-line-1-wire-networks.pdf