control solutions
TERACOM



Waterproof 1-Wire temperature and humidity sensor TSH231

USER MANUAL

1. Short description

TSH231 is a waterproof temperature and humidity sensor with a 1-Wire interface.
The sensor integrates basic elements plus signal processing and provides a fully calibrated digital output. A unique capacitive element is used for measuring relative humidity while the temperature is measured by a bandgap element. Both elements are seamlessly coupled to a 12-bit analog to digital converter. This results in superior signal quality.
The digital sensor is mounted in an IP65-rated enclosure. This provides protection against dust and water spays. A cable gland and screwless terminal block allows easy cable installation.

2. Features

- 1-Wire interface;
- LED indicator for status of communication;
- Firmware update via the interface.

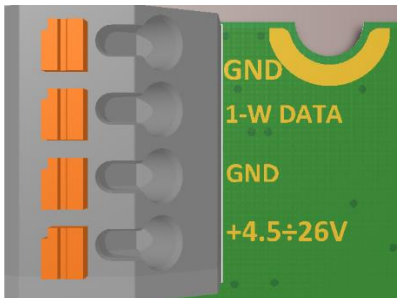
3. Applications

- Fleet management systems
- Environmental quality monitoring and assessment
- Humidity and temperature logging for vineyards, greenhouses, etc.
- Humidity and temperature logging for telco facilities
- Server room and data centers humidity and temperature monitoring

4. Specifications

- Physical characteristics
  Dimensions: 68 x 105 x 35mm
  Weight: 70g
- Environmental limits
  Operating temperature range: -20 to 60°C
  Operating relative humidity range: 10 to 90% (non-condensing)
  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 reading, with slow recovery time
  Long term drift typical: ±0.25%RH/year, ±0.05°C/year
  Higher drift might occur due to contaminant environments with vaporized solvents, adhesives, packaging materials, etc.
  Storage temperature range: -20 to 60°C
  Storage relative humidity range: 10 to 90% (non-condensing)
  Ingress protection: IP54
- Power requirements
  Operating voltage range (including -15/+20% according to IEC 62368-1): 4.5 to 26VDC
  Current consumption: 5mA@5VDC
- Humidity measurements
  Accuracy (min): ±3.0%RH (in 20 to 80 %RH range)
  Accuracy (max): ±5.0%RH (in 10 to 90 %RH range)
  Resolution: 0.1%RH
- Temperature measurements
  Accuracy (min): ±0.4°C (in -10 to +60°C range)
  Accuracy (max): ±0.6°C (in -20 to +60°C range)
  Resolution: 0.1°C

5. Pinout



Pin Description		Corresponding UTP wires color
GND	Data ground	Green/White tracer
1-W	1-Wire data	Green
GND	Power ground	Orange/White tracer
+4.5 to 26V	Positive supply	Orange

6. 1-Wire interface

1-Wire is a registered trademark of Maxim Integrated Products, Inc.

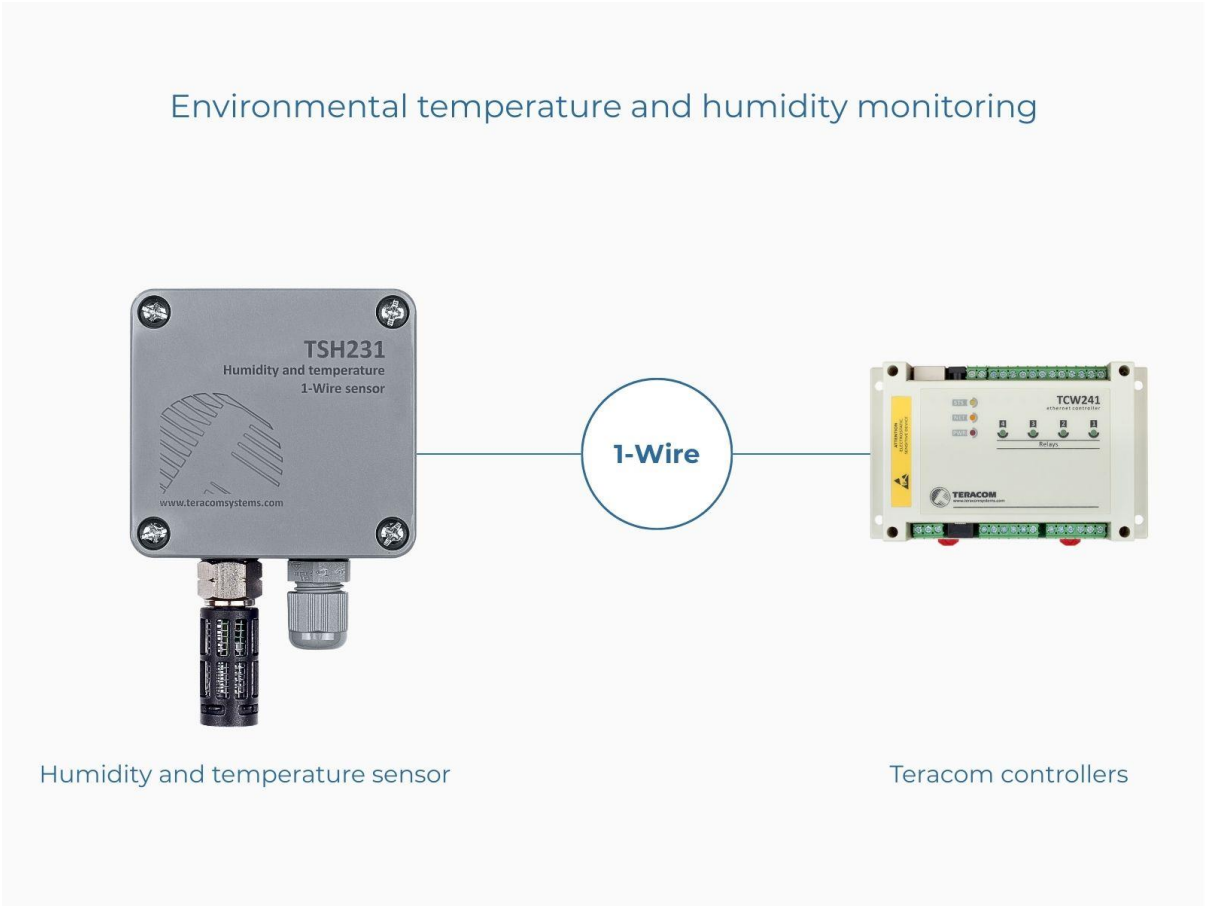
We strongly recommend reading Maxim's 1-Wire tips at:

https://www.teracomsystems.com/wp-content/uploads/1-wire/guidelines-for-reliable-long- line-1-wire-networks.pdf.

7. Installation

The device is designed for wall mounting using screws passing through the slotted holes in the enclosure.

A daisy-chained (linear) topology for multiple sensors should be used. UTP/FTP cables are strongly recommended for interconnection.



8. Installation tips

The location and the mounting position of sensors have a direct effect on the accuracy of measurements. The tips below will ensure good measuring results:

- Sensor shall be installed about 1.2-1.4 m above the floor;
- Avoid exposure to direct sunlight - solar radiation causes measurement inaccuracy;
- For outdoor usage, the sensors should be installed with protection from direct rain;
- Avoid mounting over ventilation shafts and windows/doors;
- Avoid attaching to walls in front of a chimney.
- It is recommended to mount the device in an accessible location for easier maintenance.

Attention:

The device should be installed with always filter and gland facing the floor.

9. Status indicator

The status of the device is shown by a single LED, located on the PCB:

- If the LED blinks for a period of 1 second, the sensor works properly;
- If the LED blinks for a period of 3 seconds, no communication with the controller;
- If LED doesn‘t blink, there isn‘t a power supply.

10. Recycling

Recycle all applicable material.

Do not dispose of in the regular household refuse.

