



control solutions

TERACOM



TSH230 Waterproof 1-Wire temperature and humidity sensor

Version 1.5 / March 2023

USER MANUAL

www.teracomsystems.com

1. Short description

TSH230 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 sprays. A cable gland with locknut 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 monitoring in building management systems.
- Humidity and temperature logging for mobile operator facilities, vineyards, greenhouses, etc.

4. Specifications

- Physical characteristics
Dimensions: 65.6 x 99 x 36 mm
Weight: 70 g
- Environmental limits
Operating temperature range: -20 to 60°C
Operating relative humidity range: 10 to 90% (non-condensing) *
Long term drift typical: ± 0.25 %RH/year, ± 0.05 °C/year **
Storage temperature range: -20 to 60°C
Storage relative humidity range: 10 to 90% (non-condensing)
Ingress protection: IP54
- Power requirements
Input Voltage (including -15/+20% according to IEC 62368-1): 4.5 to 26 VDC
Input Current: 5 mA@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
- Warranty
Warranty period: 3 years

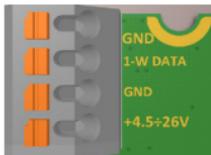
* Recommended operating range is 20% to 80% RH (non-condensing) over -10 °C to 60 °C.

Prolonged operation beyond these ranges may result in a shift of sensor reading, with slow recovery time.

It is possible that in some weather conditions the moisture in the air in the filter cap may condense. This may result in a shift of sensor reading, with slow recovery time.

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

5. Pinout



Pin Description

GND	Data ground
1-W	1-Wire data
GND	Power ground
+4.5 to 26V	Positive supply

Corresponding UTP wires color

Green/White tracer
Green
Orange/White tracer
Orange

6. 1-Wire interface

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

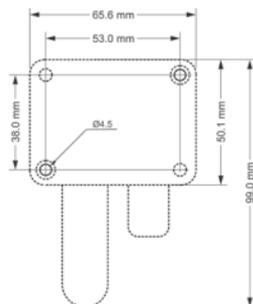
We strongly recommend reading Maxim's 1-Wire tips at:

<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.

