control solutions
TERACOM

Waterproof 1-Wire temperature and humidity sensor TSH231

USER MANUAL

For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Mailing Address: Unit 1, 14 Nobel Road,
Wester Gourdie Industrial Estate,
Dundee, DD2 4UH.

Website: www.omniinstruments.co.uk

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.

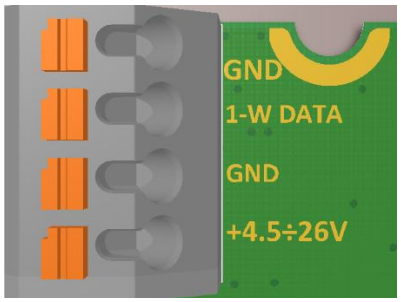
3. Applications

- 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
- Warranty
  Warranty period: 3 years

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.

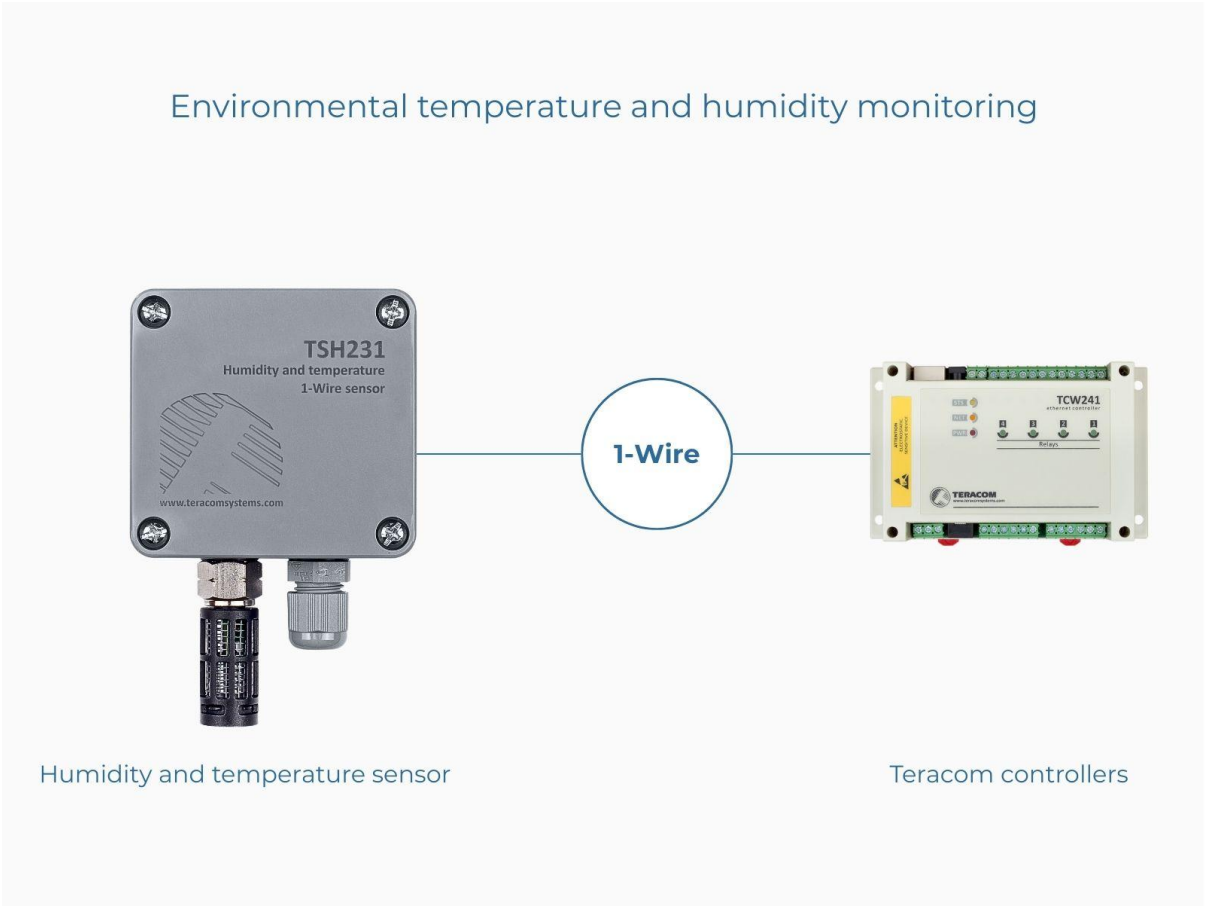
We strongly recommend reading Maxim's 1-Wire tips at:

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

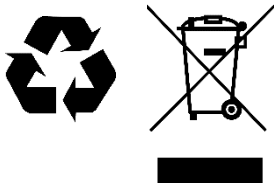
The status of the device is shown by a single LED, located on the PCB:

- 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.



For pricing or any further information, please contact Omni Instruments Ltd.

Measurement and data acquisition solutions

Contact Details:
Tel: +44 1382 443000
Email: info@omni.uk.com

Website: www.omniinstruments.co.uk

Mailing Address: Unit 1, 14 Nobel Road,
Wester Gourdie Industrial Estate,
Dundee, DD2 4UH.