



Control solutions

**TERACOM**



**TSM400-1-TH**  
**1-Wire temperature and humidity sensor**  
Version 1.0 / September 2022

**USER MANUAL**

[www.teracomsystems.com](http://www.teracomsystems.com)

## 1. Short description

TSM400-1-TH is a temperature and humidity sensor that supports the 1-Wire protocol. A unique capacitive element is used for measuring relative humidity while the temperature is measured by a band gap sensor. Both sensors are seamlessly coupled to a 12-bit analog to digital converter. This results in superior signal quality.

The TSM400-4-TH sensor is housed in a slim plastic enclosure. The bottom part of the enclosure is suitable for installation on standard flush-mounted/cavity wall boxes  $\varnothing 68\text{mm}$ , with installation openings on 61 mm.

## 2. Features

- LED indicator for status of communication
- Excellent long-term stability
- Firmware update with Teracom controller via the 1-Wire interface

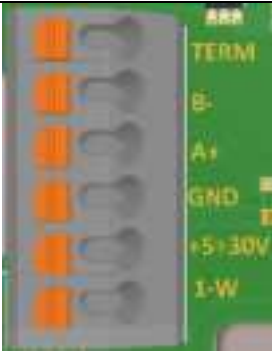
## 3. Applications

- Environmental quality monitoring and assessment for offices.
- Humidity and temperature monitoring in building management systems.
- Smart ventilation systems.

## 4. Specifications

- Physical characteristics  
Dimensions: 81 x 81 x 30 mm  
Weight: 66 g
- Environmental limits  
Operating temperature range: -20 to 60°C  
Operating relative humidity range: 5 to 95% (non-condensing)  
Storage temperature range: -20 to 60°C  
Storage relative humidity range: 5 to 95% (non-condensing)  
Ingress protection: IP20
- Power requirements  
Operating voltage range (including -15/+20% according to IEC 62368-1): 4.5 to 26 VDC  
Current consumption: 5 mA@5VDC
- Humidity measurements  
Accuracy (min):  $\pm 3.0\%$  RH (in 20 to 80 %RH range)  
Accuracy (max):  $\pm 5.0\%$  RH (in 5 to 95 %RH range)  
Resolution: 0.1 %RH  
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.
- Temperature measurements  
Accuracy (min):  $\pm 0.4\text{ °C}$  (in -10 to +60°C range)  
Accuracy (max):  $\pm 0.6\text{ °C}$  (in -20 to +60°C range)  
Resolution: 0.1 °C
- Warranty  
Warranty period: 3 years

## 5. Pinout

	Pin	Description	UTP wires color
	1-W	1-Wire data	Green
	+5÷30V	Positive power supply	Orange
	GND	Ground (negative) supply	Green/White tracer Orange/White Tracer
	A+	Not used	
	B-	Not used	
	TERM	Not used	

## 6. Installation

It is strongly recommended to use UTP/FTP cables and daisy-chained (linear) topology for multiple sensors and keep the total cable length up to 30 meters.



“Star” topology can be used only as a last resort for up to 4 sensors and a total cable length of up to 10 meters.



## 7. Status indicator

The status of the device is shown by a single LED, located inside the box:

- If the LED blinks for a period of 1 second, the sensor works properly;
- If the LED blinks for a period of 3 seconds, there isn't communication with the controller;
- If the LED doesn't blink, there isn't a power supply.

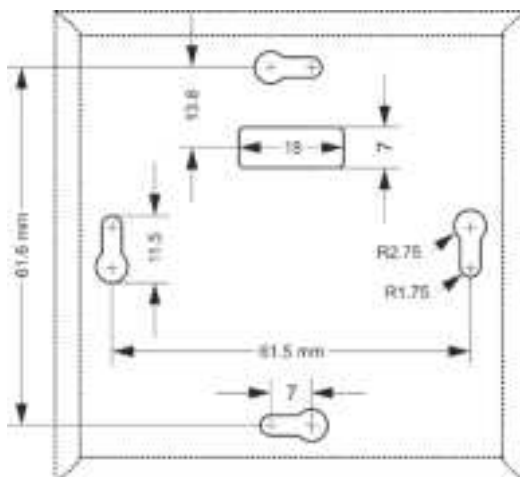
## 8. Installation tips

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

- The sensor shall be installed about 1.2-1.4 m above the floor;
- To avoid solar radiation, the sensor should not be installed next to windows or directly in the sunlight;
- The sensors shall be installed in a place with sufficient air circulation.

1-Wire is a registered trademark of Maxim Integrated Products, Inc. It is strongly recommended to read Maxim's 1-Wire tips at <https://teracomsystems.com/wp-content/uploads/AN148.pdf>.

TSM400-1-TH sensor is intended for installation on a cavity wall box with 68mm diameter and 61 mm screw spacing.



## 9. Firmware update

The firmware of the sensor can be updated with any Teracom controller which supports a 1-Wire interface. For more details ask your dealer.

## 10. Recycling

Recycle all applicable material.

Do not dispose of regular household refuse.

