Manuals+ — User Manuals Simplified.

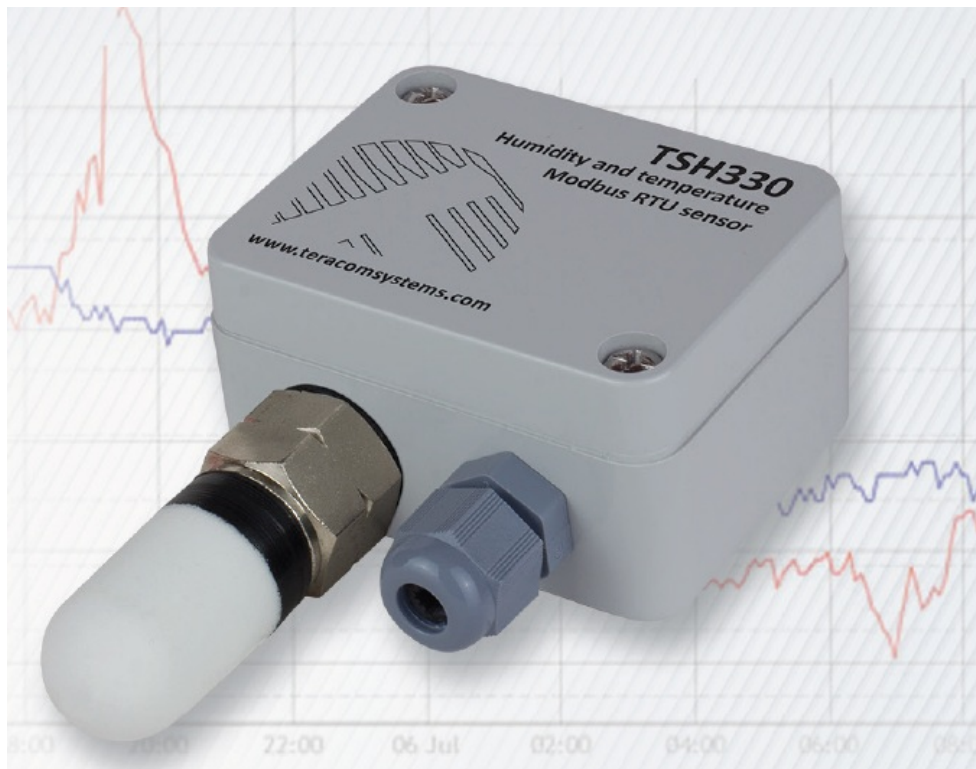# TERACOM TSH330 IP54 Modbus RTU Temperature and Humidity Sensor User Manual

Contents

TERACOM TSH330 IP54 Modbus RTU Temperature and Humidity Sensor

Short description

TSH330 is an IP54 temperature and humidity sensor with an RS-485 interface. It supports the Modbus RTU protocol.

The temperature and humidity 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.

Features

- RS-485 interface carrying up to 32 nods;
- LED indicator for status of communication;
- Changeable bitrate and other communication parameters;
- Firmware update via the interface.

Applications

- Server room and data centers humidity and temperature logging.
- Environmental quality monitoring and assessment.
- Humidity and temperature monitoring in building management systems.
- Humidity and temperature logging for mobile operator facilities, vineyards, greenhouses, etc.

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: 5 to 95% (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.

  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.

  Storage temperature range: -20 to 60°C

  Storage relative humidity range: 5 to 95% (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 5 to 95 %RH range)

  Resolution: 0.1 %RH
- Temperature measurements
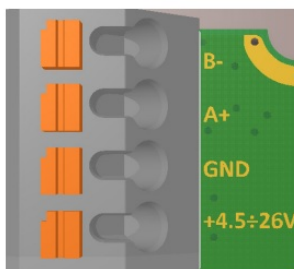
  Accuracy (min): ±0.4 °C (in -10 to +60°C range)

  Accuracy (max): ±0.6 °C (in -20 to +60°C range)

  Resolution: 0.1 °C
- Warranty

  Warranty period: 3 years

Pinout

Pin Description		Corresponding UTP wires color
Line B-	RS485	Blue
Line A+	RS485	Blue/White Tracer
GND	Ground (negative) supply	Brown
+4.5÷26V	Positive power supply	Brown/White Tracer

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 mandatory for interconnection. The last sensor in the chain should have a terminator of 120ohm installed on the bus. TSH330 has a built-in terminator. To enable it, please close the jumper.

RS-485
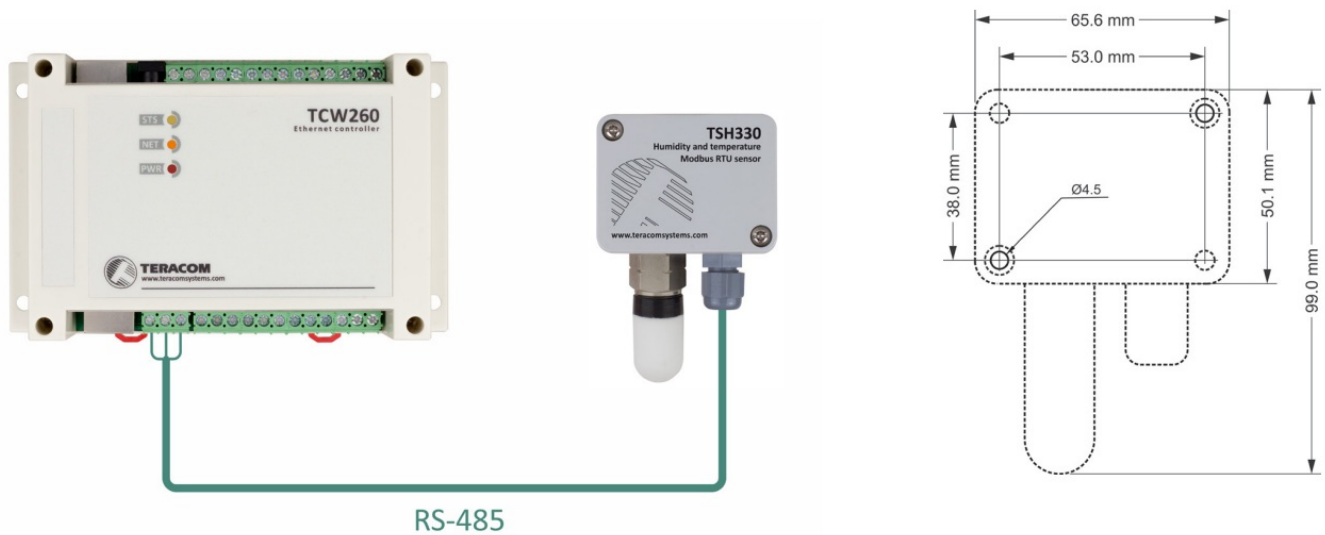
Installation tips

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.

Status indicator

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

- 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 LED doesn't blink, there isn't a power supply.

Factory default settings

Disconnect the sensor from the bus (switch off the power supply).
Press and hold the "config" button. Don't release the button, connecting the sensor to the bus (switch on the power supply).
The "status" LED will be ON for 3 seconds and after this will flash for 7 seconds. After the 10-th second the LED will be ON.
Release the button. The sensor will restart with factory default settings.

Firmware update

The firmware of the sensor can be updated with a Teracom controller which supports MODBUS RTU or MBRTU-Config software. For more details ask your dealer.

Modbus address table

Register name	R/W	FC	PDU Address (Decimal)	Logical address (Decimal)	Offset (Decimal)	Data size	Default	Valid values
RS-485 address	R/W	03/06	10	40011	40001	16-bit uns. integer	1	1-247
Baud rate *	R/W	03/06	11	40012	40001	16-bit uns. integer	19200	2400, 4800, 9600, 19200, 38400, 57600
Parity, data, stop bits *	R/W	03/06	12	40013	40001	16-bit uns. integer	1	1=E81, 2=O81, 3=N81
Data order	R/W	03/06	13	40014	40001	16-bit uns. integer	1	1=MSWF (MSW, LSW) 2=LSWF (LSW, MSW)
Sub-family number	R	3	14	40015	40001	16-bit uns. integer		0xCD
FW version	R	3	15	40016	40001	16-bit uns. integer		
Vendor URL	R	3	18	40019	40001	64 bytes UTF-8		teracomsystems.com
Float test value (MSWF)	R	3	82	40083	40001	32-bit float		-9.9(0xC11E6666)
Float test value (LSWF)	R	3	84	40085	40001	32-bit float		-9.9(0xC11E6666)
Signed integer test value	R	3	86	40087	40001	16-bit sig. integer		-999(0xFC19)
Signed integer test value (MSWF)	R	3	87	40088	40001	32-bit sig. integer		-99999(0xFFFE7961)
Signed integer test value (LSWF)	R	3	89	40090	40001	32-bit sig. integer		-99999(0xFFFE7961)
Unsigned integer test value	R	3	91	40092	40001	16-bit uns. integer		999(0x03E7)
Unsigned integer test value (MSWF)	R	3	92	40093	40001	32-bit uns. integer		99999(0x0001869F)

Unsigned integer test value (LSWF)	R	3	94	40095	40001	32-bit uns. integer		99999(0x0001869F)
Temperature °C	R	3	100	40101	40001	32-bit float		
Humidity %RH	R	3	102	40103	40001	32-bit float		
Dew point °C	R	3	104	40105	40001	32-bit float		
Temperature °F	R	3	200	40201	40001	32-bit float		
Humidity %RH	R	3	202	40203	40001	32-bit float		
Dew point °F	R	3	204	40205	40001	32-bit float		
Temperature °C x 100	R	3	400	40401	40001	16-bit sig. integer		
Humidity %RH x 100	R	3	401	40402	40001	16-bit sig. integer		
Dew point °C x 100	R	3	402	40403	40001	16-bit sig. integer		
Temperature °F x 100	R	3	500	40501	40001	16-bit sig. integer		
Humidity %RH x 100	R	3	501	40502	40001	16-bit sig. integer		
Dew point °F x 100	R	3	502	40503	40001	16-bit sig. integer		

MSWF – Most significant word first – (bits 31 … 16), (bits 15 … 0); LSWF – Least significant word first – (bits 15 … 0), (bits 31 … 16); PDU address – Actual address bytes used in a Modbus Protocol Data unit
A "NaN" value is returned for unavailable floating-point values (e.g. in case of measurement error)

- The settings will take effect after restarting the sensor by a power-on reset.

Recycling

Recycle all applicable material.
Do not dispose of in the regular household refuse.

Documents / Resources

	TERACOM TSH330 IP54 Modbus RTU Temperature and Humidity Sensor [pdf] User Manual TSH330, IP54 Modbus RTU Temperature and Humidity Sensor, TSH330 IP54 Modbus RTU Temperature and Humidity Sensor, Modbus RTU Temperature and Humidity Sensor, RTU Temperature and Humidity Sensor, Humidity Sensor

References

- ⚲ **Remote monitoring and control solution for your automation challenges**
- ⚲ **Remote monitoring and control solution for your automation challenges**

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