

checkline
TD-180 Humidity
And Temperature
Transmitter



checkline TD-180 Humidity And Temperature Transmitter Instruction Manual

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checkline

checkline TD-180 Humidity And Temperature Transmitter



Product Information

Specifications

- **Model:** RMS-TD-180
- **Type:** Humidity & Temperature Transmitter
- **Components:**
 1. Air humidity and temperature sensor
 2. Sensor head
 3. Sensor cable
 4. Aluminum housing
 5. Sensor plug
 6. Mounting bracket

Product Usage Instructions

Introduction

- **Information about this operating manual:** This manual is essential for the safe and effective use of the RMS-TD-180. Users must read and understand it before operation.
- **Limitation of liability:** Follow all safety and operating instructions to ensure device safety. Non-compliance may void the warranty.

For Your Safety

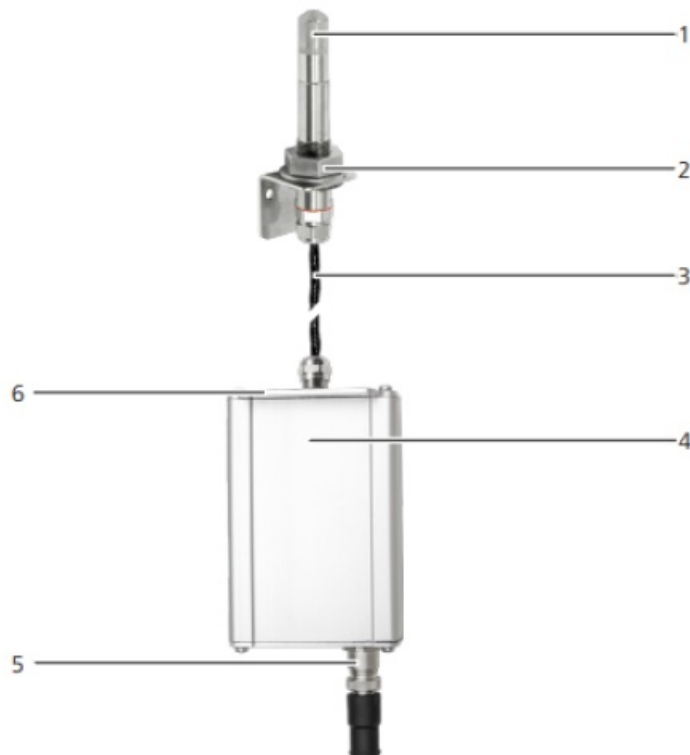
- **Proper use:** Use a remote measuring probe for certain applications like installation in sewage pipes for temperature adjustments.
- **Improper use:** Do not use the device in ATEX environments.
- **User qualifications:** Only operate the device if you can reliably take measurements. Avoid operation if reaction times may be affected by drugs, alcohol, or medication.

FAQ

Q: Can the device be used in ATEX environments?

A: No, the device must not be used in ATEX environments as per safety guidelines.

OVERVIEW



No.	Name
1	Air humidity and temperature sensor
2	Sensor head
3	Sensor cable
4	Aluminum housing
5	Sensor plug
6	Mounting bracket

Introduction

Information about this operating manual

This operating manual is designed to enable you to use the [RMS-TD-180](#) safely and effectively. It is part of the device, has to be stored nearby, and must be easily accessible to users at all times.
All users are required to carefully read and make sure that they have understood this operating manual before using the [RMS-TD-180](#). All of the safety and operating instructions detailed in this manual have to be observed to ensure the safety of the device.

Limitation of liability

- All of the information and instructions provided in this operating manual have been compiled based on the current standards and regulations, the state of the art, and the extensive expertise and experience of Checkline

Europe BV.

- Checkline Europe BV does not accept any liability for damage associated with the following, which also voids the warranty.
- Non-observance of this operating manual
- Improper use
- Inadequately qualified users
- Unauthorized modifications
- Technical changes
- Use of unapproved spare parts
- This fast measuring procedure can be affected by a range of different factors. We, as the manufacturer, do not accept any liability for any incorrect measurements and associated consequential damage.

Customer service

- For technical advice, please contact our customer service. Your purchased measuring instrument can be calibrated, and the adjustment checked by using suitable test ampoules/calibration ampoules.
- For this purpose, use only the calibration solutions distributed by Checkline Europe.

For your safety

- The device complies with the following European directives.
- Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)
- Electromagnetic compatibility (EMC) The device corresponds to state-of-the-art technology. However, it is still associated with many residual hazards.
- These hazards can be avoided through strict observance of our safety information.

Proper use

- Transducer for measuring and transmitting relative humidity and temperature in fixed Installation
- The sensor technology used makes it possible to detect even small fluctuations in humidity and their tendencies quickly and reliably so that preventive actions can be taken.
- For some applications (e.g. installation in sewage pipes) it is necessary to use a remote measuring probe for the reason of temperature adjustment.

Improper use

- The device must not be used in ATEX.

User qualifications

- The device must only be operated by people who can be expected to reliably take the measurements. The device must not be operated by people whose reaction times may be slowed due to, e.g. the use of drugs, alcohol, or medication.
- All persons using this device must have read, understood, and follow the instructions provided in the operating

manual.

General safety information

- The following safety information has to be observed at all times to avoid damage to objects and injury to people.
- In case of damages or loose parts on the device, contact Checkline Europe.
- All of the device's technical features have been inspected and tested before delivery. Every device has a serial number. Do not remove the tag with the serial number.

Warranty

- The warranty does not apply.
- Damage resulting from non-observance of the operating manual
- Damage resulting from third-party interventions
- Products that have been used improperly or modified without authorization
- Products with missing or damaged warranty seals
- Damage resulting from force majeure, natural disasters, etc.
- Damage from improper cleaning

On receipt of your device

Taking the device out of its packaging

- Take the device out of its packaging.
- Next, make sure that it is not damaged and that no parts are missing.

Make sure that all of the components have been included

- Make sure that all of the components have been included by checking the package contents against the following list:

Scope of supply

- [RMS-TD-180](#)
- Connecting cable of 1.9 m length
- Operating manual

Optional accessories:

- Display for RMS-TD
- Display with keypad for RMS-TD
- Relay output for moisture for RMS-TD
- Mounting bracket for RMS-TD
- Drip-catcher for RMS-TD

- RS232 interface – described in a separate operating manual
- USB interface – described in a separate operating manual
- Profinet interface – described in a separate operating manual
- Ethernet interface – described in a separate operating manual
- Modbus interface – described in a separate operating manual
- Custom-made design – flat rate for air humidity transmitter series per order
- Factory calibration certificate, calibration equipment, certified calibration ampoules, and reference devices – for continuous monitoring

Installation of the transmitter

Laying of the supply line or transmission line

- The cable must not be laid in the area of interference fields.
- Do not operate the transmitter in the area of electromagnetic interference fields.
- The permissible cross-sections for the installation must be observed.
- The cable length must be kept as short as possible. » If an extension of the cable is required, the cross-section of the extension must not be below 0,25 mm².
- If the electronics housing and the display electronics are grounded, an appropriate equipotential bonding conductor must be provided.

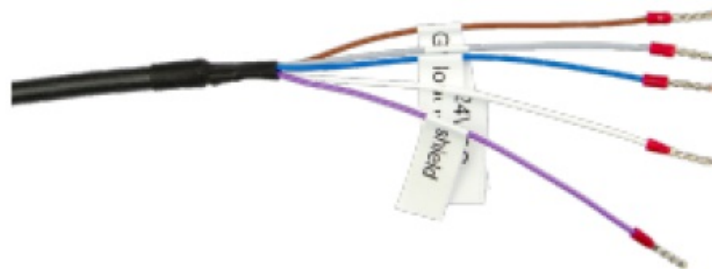
Mounting the transmitter

- The measuring probe must be positioned at a representative location.
- Avoid positions of drought and unnatural temperature fluctuations.
- Do not expose the device to direct sunlight.
- If the sensor tube is twisted, the tightness is no longer guaranteed
- When there is a possibility of condensation, position the sensor probe slightly upwards (approx. 10 degrees angle).
- The condensation water can then flow away from the sensor probe towards the housing or cable and drain off.
- If it is impossible to place the unit at an upward angle, a drip nose (optional accessory) must be installed.
- Installation inside an air duct (or at mounting locations where temperature differences between sensor probe and sensor housing may occur:
- The sensor must be inserted fully into the opening until it stops, to avoid a temperature drop along the sensor tube.

See picture:

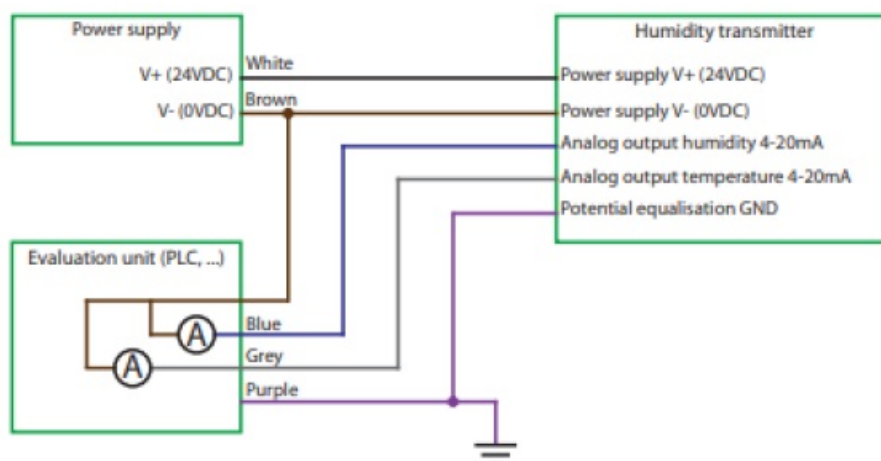


Pin assignment

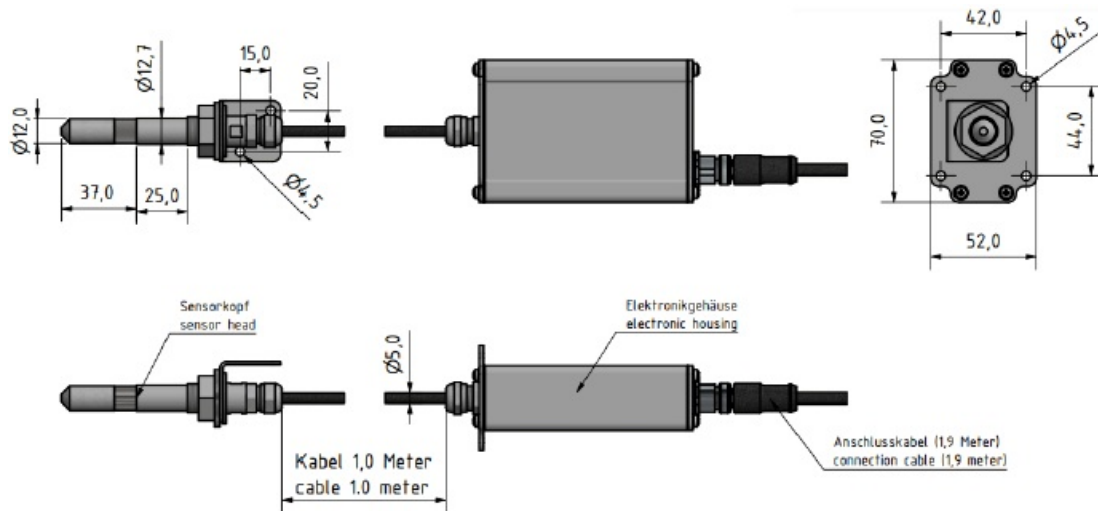


Cable color	Pin no	Function
Brown	1	Power supply V- (0 VDC) / Ground current output
White	2	Power supply V+ (12 to 29 VDC)
Blue	3	Analog output humidity 4 – 20 mA
Black	4	n.c.
Grey	5	Analog output temperature 4 – 20 mA
Purple	Housing	Equipotential bonding GND

Wiring Diagram

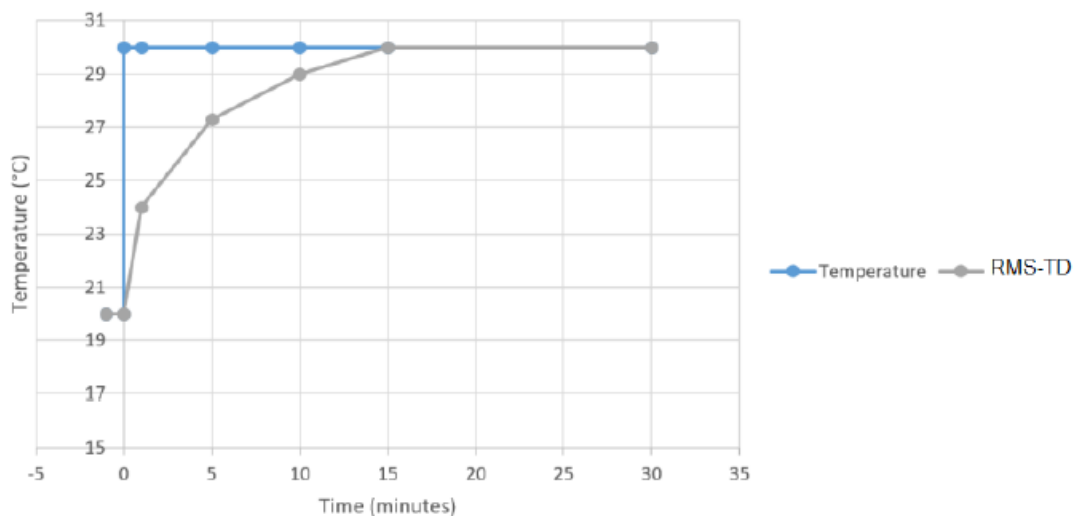


Technical drawing



Adjustment behavior of the sensor

- In humidity and temperature measurement, several parameters are responsible for the adjustment behavior (time until the actual measured value is displayed).
- The parameter responsible for the highest measuring error is a temperature discrepancy between the sensor resp. the whole measuring instrument and the material being measured resp. the air.
- Therefore, let the device adjust until the displayed temperature corresponds to the actual temperature. The graph below shows how long it takes to adjust from 20 °C to 30 °C.



- To demonstrate the importance of temperature adjustment, the table below shows the measuring errors due to a temperature difference between the measuring instrument and the material being measured of only 1 °C, at different ambient temperatures.

	10 °C	20 °C	30 °C
10 % r.h.	+/- 0.7 %	+/- 0.6 %	+/- 0.6 %
50 % r.h.	+/- 3.5 %	+/- 3.2 %	+/- 3.0 %
90 % r.h.	+/- 6.3 %	+/- 5.7 %	+/- 5.4 %

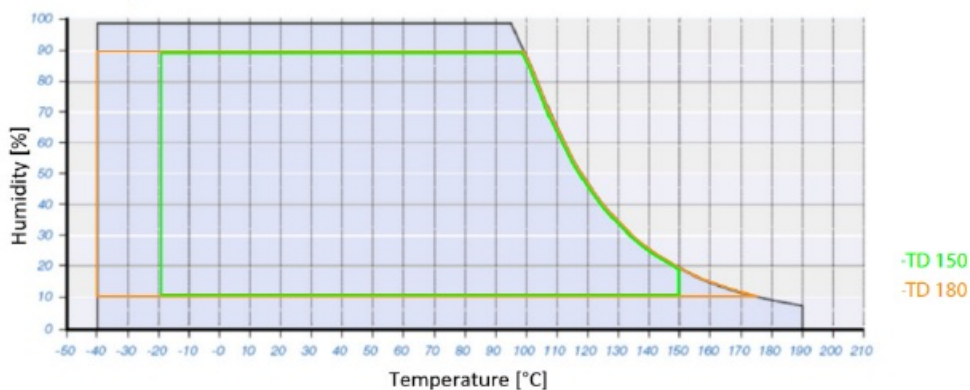
- At room temperature (20 °C) and an assumed humidity value of 50 % relative humidity a temperature difference between the measuring sensor and the material being measured of 1 °C causes a measurement error of 3.2 % relative humidity.
- A temperature difference of 3 °C would cause a measurement error of more than 10 % relative humidity.

Definition relative humidity

- Indicates the relationship between the current water vapor pressure and the maximum possible, the so-called saturation vapor pressure.
- The relative humidity shows the degree the air is saturated with water vapor.
- **Examples:** 50% relative humidity: At the current temperature and pressure, the air is half saturated with water vapor. 100% relative humidity means that the air is saturated with water vapor.
- If the air has more than 100% humidity, the excessive humidity would condense or precipitate as mist.

Application range

- Within the normal application range (normal range) the accuracy of the device is as indicated. Long-term application beyond the normal application range (max. range), particularly at an air humidity of more than 80%, can lead to higher measuring errors.
- Back in the normal application range, the sensor will return to the indicated accuracy automatically.



Cleaning and maintenance

Regularly cleaning and maintaining the device will ensure that it will have a long service life and stay in good condition.

Care instructions

- Do not leave the device out in the rain.
- Do not immerse the sensor in water.
- Do not expose the device to extreme temperatures.
- Protect the device from strong mechanical shocks and loads.

Cleaning the device

- **ATTENTION** Do not clean with fluids Water or cleaning fluid getting inside the device can destroy the device. ► Only clean with dry materials.

Aluminum housing and sensor tube

- Clean the aluminum housing and the sensor tube with a dry cloth.

Air humidity and temperature sensor

- The air humidity and temperature sensor cannot be cleaned.
- In case of a polluted sensor please contact Checkline Europe.

Checking the calibration

- **To do so:** Calibration equipment and calibration ampoules are required.
- The device, the calibration equipment, and the humidity standards must have a temperature between 20.0 °C and 26.0 °C.
- It is recommended to store the device, the calibration equipment, and the calibration ampoules in a room with little temperature fluctuation for 24 hours.

Assembling the calibration equipment

1. Place the sealing ring over the threads of the lower part as shown in (figure 1).
2. Place the textile pad into the lower part (figure 2) and carefully pour the humidity standard onto the pad, beginning with the humidity standard of 35 % relative humidity.
3. Carefully place the upper part onto the lower part (figure 3) and tighten the upper part clockwise.
 - **Recommendation:** Keep the lower part on the table while screwing on the upper part. » If necessary, only lift the calibration equipment straight up and do not tilt or turn it over.



4. Loosen the fixing nut counterclockwise until the sensor tube of the measuring device can be inserted without excessive pressure.
5. Now carefully push the sensor tube of the measuring device into the upper part until it stops (figure 4).
6. Secure the calibration equipment on the sensor tube by tightening the previously loosened fixing nut.
 - Make sure to lift the device with the calibration equipment only straight up and do not tip or turn it over. Otherwise, you could damage the sensor.
 - Do not remove the calibration equipment from the sensor tube until specifically indicated otherwise.
 - Place a distance holder under the device so that the device and the calibration equipment lay horizontally on the table.
 - **ATTENTION** Damage to the sensor. By tilting or turning the device with mounted calibration equipment the sensor can be destroyed. ► Only lift the device with mounted calibration equipment straight up

Determining the deviation

1. Let the sensor adjust to the humidity standard for at least 2 hours.
2. Then note down the measured relative humidity and temperature.
3. At ideal temperature conditions (device, calibration equipment, and humidity standard have a temperature of 23 °C), the value printed on the humidity standard can be used as a reference value.
4. In case of deviation from the factory temperature (23.0 °C), the real humidity value must first be determined according to the table below.

Temperature	Humidity standards		
	35 %	50 %	80 %
20 °C	34.6 %	49.8 %	79.9 %
21 °C	34.8 %	49.8 %	80.0 %
22 °C	34.9 %	49.9 %	80.0 %
23 °C	35.0 %	50.0 %	80.0 %
24 °C	35.1 %	50.1 %	80.0 %
25 °C	35.2 %	50.2 %	80.0 %
26 °C	35.4 %	50.2 %	80.1 %

5. Note down the real humidity value
6. Compare the noted displayed measuring value with the real humidity value.
 - If the deviation revealed is below 1.5 % relative humidity, it is not recommended to recalibrate.
 - If the deviation revealed is more than 1.5 % relative humidity, please contact Checkline Europe.
7. Now remove the calibration equipment from the sensor tube and repeat the procedure from “9.1 Assembling the calibration equipment”, optionally with the humidity standard of 50 % relative humidity or the humidity standard of 80 % relative humidity

Faults

If the measures listed below fail to remedy any faults or if the device has faults not listed here, please contact Checkline Europe BV.

Fault	Cause	Remedy
Measuring error	The temperature is outside the operating temperature: lower than -20 °C or higher than +60 °C	Only use the device in temperatures between -20 °C and +60 °C
	Measurement error due to too short temperature adjustment time	Let the device adjust to the surroundings (see "6. Adjustment behavior of the sensor").
	Sources of heat or cold that do not correspond to the surrounding temperature	Reposition your device at a location that is representative of the room climate.
	Dripping water or sprayed water	Direct contact of the sensor with dripping or sprayed water will destroy it.
	Irreversible damage to the sensor due to aggressive gases	Please contact your Checkline Europe
	Condensation caused by a change in temperature	Condensation on the sensor interferes with the calibration. Let the device adjust to the surrounding temperature
	Polluted air humidity and temperature sensor	Please contact your Checkline Europe
	Foreign particles on the sensor	Please contact your Checkline Europe

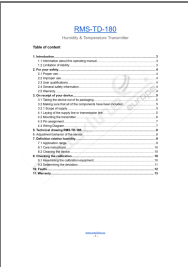
Warranty

- Checkline Europe (Checkline) warrants to the original purchaser that this product is of merchantable quality and confirms in kind and quality with the descriptions and specifications thereof. Product failure or malfunction arising out of any defect in workmanship or material in the product existing at the time of delivery thereof which manifests itself within one year from the sale of such product, shall be remedied by repair or replacement of such product, at Checkline's option, except where unauthorized repair, disassembly, tampering, abuse or misapplication has taken place, as determined by Checkline. All returns for warranty or non-warranty repairs and/or replacement must be authorized by Checkline, in advance, with all repacking and shipping expenses to the address below to be borne by the purchaser.
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- Some State jurisdictions or States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. The duration of any implied warranty, including, without limitation, fitness for any particular purpose and merchantability for this product, is limited to the duration of the foregoing warranty. Some states do not allow limitations on how long an implied warranty lasts but, notwithstanding, this warranty, in the absence of such limitations, shall extend for one year from the date of invoice.

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Documents / Resources

	checkline TD-180 Humidity And Temperature Transmitter [pdf] Instruction Manual TD-180, TD-180 Humidity And Temperature Transmitter, TD-180, Humidity And Temperature Transmitter, And Temperature Transmitter, Temperature Transmitter, Transmitter
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References

-  [Checkline Europe - Your Partner For Measuring Equipment](#)
-  [Checkline Europe - Your Partner For Measuring Equipment](#)
- [User Manual](#)

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