

Wöhler TI 410

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1 Preface

- 1.1 **Operation Manual Information** This manual enables the user to handle the Wöhler TI 410 safely. Please keep this manual for your information.

In principle, the Wöhler TI 410 Dew-point Indicator should only be used by skilled personnel for its intended use and within the specified range of data.

Liability is void for any damages caused by not following this manual.

- 1.2 **Notes**



Warning!

Not following this warning can cause injury or death.



Attention!

Not following this note can cause damage to the device.



Note!

Tips and other useful information

- 1.3 **Intended application** The Wöhler TI 410 Dew-point indicator may only be used for controlling the build-up of exhaust gas in gas fire places that are dependent on air conditioning.

The device may only be used in interior rooms.

Every other application is not intended and therefore forbidden.

- 1.4 **Security advices**



WARNING!

Never use the Wöhler TI 410 Dew-point Indicator in any potentially explosive atmosphere. Never use the unit in any environment where there can be an explosive gas atmosphere. In such an environment, even batteries should not be taken out of the unit and/or exchanged.



WARNING!

Never perform any measurements at conducting parts.

1.5 Scope of delivery

Device	Scope of delivery
Wöhler TI 410	Device with swan neck, batteries and flexarm for sensor plate

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1.6 Transport



Attention!

The device may be damaged by improper transport!

Always protect the sensor plate by the cover to avoid transport damage.

1.7 Information on disposal



Electronic equipment does not belong into domestic waste, but must be disposed in accordance with the applicable statutory provisions.

You may hand in any defective batteries taken out of the unit to our company as well as to recycling places of public disposal systems or to selling points of new batteries or storage batteries.

1.8	Address	Wöhler Technik GmbH Schützenstr. 41 D-33181 Bad Wünnenberg Tel.: +49 2953 73-100 Fax: +49 2953 73-250 E-Mail: info@woehler.com
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2 Functional principle

The dew-point indicator shows exhaust gas build-up. Exhaust gas that has been built up is characterised by an increased humidity and temperature relative to the ambient air. A possibly likewise presence of CO content has a strong toxic effect, which is why exhaust gas build-up can be highly dangerous.

To provide a sure detection, the measurement is effected via two independent sensors:

1. measurement of the surface resistance of the sensor plate
2. measurement of the temperature

When a pre-determined resistance of the sensor plate is undercut, an optical and an acoustic signal is emitted.

The increased temperature of the outflowing exhaust gas is recognized by the fast-reacting temperature sensor, which is located in a protective position in a hole at the end of the sensor plate.

For to adapt to the different ambient conditions, the operator can adjust the sensitivity in four different steps. To attain a high battery life, the instrument switches off automatically after four minutes, when no key has been pressed.

3 Technical Data

Description	Specification
Temperature measuring range	-40 to 100°C
Resolution	0.1 °C
Accuracy	± 1 °C
Indicators	<ol style="list-style-type: none"> 1. acoustic through pulsed alarm tone 2. optical through four-step bar 3. increased temperature indication relative to the surroundings
Setting of the sensitivity	in four steps
Automatic switch-off	After ten minutes
Power supply:	9 V block battery (indication if battery voltage is too weak)
Operational life	About 100 hours
Sensor plate	Double-sided

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4 Control elements



Fig. 1: Control elements TI 410

Legend

- 1 Display
- 2 ON/Off (on the instrument base)
- 3 SENS
- 4 HOLD
- 5 Protective cover for sensor plate

5 Display options



Fig. 2: Temperature indication sensitivity step 1



Fig. 3: Temperature indication sensitivity step 2



Fig. 4: Bar indication

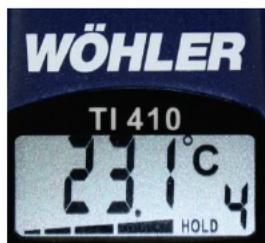


Fig. 5: Bar indication Hold function



Fig. 6: Temperature unite, Fahrenheit

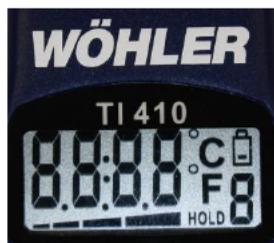


Fig. 7: Initial picture with battery symbol, bar indication, both temperature units and hold function

6 Before starting the measurement

Before starting the measurement, test the operational capability of your device:

- Carefully clean the sensor plate with a dry cloth or acetone
- Breathe on the sensor plate



NOTE!

Breathe through your nose (Filter)

The device should now respond to sensitivity step 4 (see chapter 7.2)



NOTE!

Before switching on the device, the temperature of the sensor plate should not be higher than the room temperature.

7 Handling

- 7.1 Use of the measuring instrument**
- The TI 410 is switched on and off by pressing the On/Off button.
- After switching on the device, all display possibilities appear in the display. During this short stabilization phase, the device will redetermine the zero point for the measurement of the dew point.
-  **NOTE!**
Please take care that the sensor is located in dry air during the stabilization phase.
- After that, the measured ambient temperature appears in the display. If there is a rise in humidity, when e.g. the flexarm is passed into an exhaust-gas pipe and the sensor plate is surrounded by exhaust gas flow from both sides, then a one-to-four-step bar is seen in the display, depending on the degree of humidity. As soon as the second bar is shown, a controlled alarm tone additionally sounds. Moreover, the increased temperature of the exhaust gas is shown.
- 7.2 Adjusting the sensitivity**
- Activating the button "SENS" a number of times lets you adjust the sensitivity of the Wöhler TI 410 to an increased humidity in four steps. The respective current step is shown in the display. Step 4 is the most sensitive step.
- 7.3 Freezing the display indication**
- By pressing the button "HOLD", you have the possibility during the measuring to freeze the indication, when for example inaccessible positions are to be measured and subsequently readings are to be comfortably made.
- 7.4 Changeover of the temperature indication**
- Simultaneous pressing of the "HOLD" and "On/Off" buttons; when the meter is switched on, lets you change between the degree celsius and degree fahrenheit indications.

8 Trouble Shooting

The following table shows possible failures and explains how to repair them.

Indicator	Possible reason	Trouble shooting
Battery symbol appears in the display.	The necessary battery voltage is undercut.	Change Battery.
LOW	$T < -40^{\circ}\text{C}$	Temperature is out of range.
HIGH	$T > 100^{\circ}\text{C}$	Temperature is out of range.
ERR	Measuring error during the stabilization phase	Switch off the device. Wait until the sensor is dry. Switch on the device.

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9 Note of care

The sensitivity of the TI 410 depends very strongly on the condition of the sensor plate. If the sensor plate is dirty, the sensitivity is lowered strongly. Use a cloth dampened with acetone for cleaning. The cleaning must be carefully done so that the temperature sensor is not damaged. Hand contact with the sensor plate should be minimized as much as possible.

10 Calibration

If the device does not work correctly during the operability test described in chapter 6, a recalibration will be necessary.

Before starting the calibration, switch on the device as described in chapter 7.1. Press the buttons "SENS" and "ON/OFF" at the same time, to enter the calibration mode. The icon "C" will appear at the right bottom of the display.



NOTE!

If the calibration mode was activated by mistake, it can be deactivated by pressing the "SENS" button without changing the calibration.

During the calibration, the TI 410 shows constantly the raw data of the condensation sensor. Hold the sensor above a water quench with a temperature that is approximately 10 °C higher than the room temperature. The measuring signal should increase considerably and stabilize after some seconds.

As soon as the signal has stabilized, the measurement must be stopped by pressing "HOLD". After pressing the buttons "SENS" and "ON/OFF" at the same time, the actual measured value will be assumed as the reference value. This will be shown in the Display by "SAVE".

11 Service

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Test Equipment Depot - 800.517.8431 - 99 Washington Street Melrose, MA 02176
TestEquipmentDepot.com

12 Declaration of conformity

The product: **Wöhler TI 410 Dew-Point Indicator**

conforms with the essential protection requirements which are set out in the directives of the European Council for to adapt the legal provisions of the Member States in respect of electromagnetic compatibility (2014/30/EU).

The following standards were availed of for to evaluate the product in respect of electromagnetic compatibility:

EN 61326 : 1997 + A1 : 1998 + A2 : 2001 + A3 : 2003

EN 61000-4-2: 1995+A1:1998+A2 : 2001

EN 61000-4-3 : 2006

