

INSTRUCTION MANUAL

**BENCHTOP
DISSOLVED OXYGEN/
AIR PRESSURE/ TEMPERATURE
METER
Model: TD 7**



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Introduction

This instrument is manufactured with the latest technology and needs no particular maintenance. **TOSHCON** certifies that this instrument was thoroughly inspected and tested at the factory prior to shipment and found to meet all requirements defined by contract under which it is furnished. However, dimensions and other physical characteristics may differ.

The normal operating temperature should be between 0° and 40°C. Never use the instrument in a room with high humidity (>95 %) or at very low temperatures (condensation water!).

Warranty

This instrument (excluding all accessories) is warranted against defective material and workmanship for a period of twelve (12) months from the date of shipment ex factory. **TOSHCON** will repair all defective equipment returned to it during the warranty period without charge, provided the equipment has been used under normal laboratory conditions and in accordance with the operating limitations and maintenance procedures in this instruction manual and when not having been subject to accident, alteration, misuse or abuse. A return authorisation must be obtained from **TOSHCON** before returning any product for warranty repair on a freight prepaid basis!

TOSHCON is not liable for consequential damages arising out of the use or handling of its products.

Servicing

In the event of this instrument being returned for servicing, the owner is requested to remove the power supply lead and **NOT** to send the following items unless they are suspect:

Manual

Cables

Accessories

If serious malfunctioning occurs, stop using the unit immediately and consult your Local **TOSHCON** dealer.

Keyboard

MODE = Selects all modes or escapes from error traps, calibration procedures, etc. by returning to the original mode.

CAL = Starts or proceeds a calibration or a function.

↑↓ = Button for entering a value or for selecting a function.

ON/OFF = Switches the instrument ON or OFF.

AC adaptor

Connect the AC adapter (9 V, 300 mA for 230 V~ or 120 V~) to the DC socket.

Do not hold the adaptor by wet hand!

Set-up

1. Select [SETTINGS] by pressing **MODE**.
2. Follow the instructions on the screen to adjust language, contrast and automatic power-off timer or to erase the memory. Press **CAL** to confirm or **MODE** to exit.

Inputs

The measuring electrodes should be connected to the corresponding coaxial O₂ connectors. Automatic temperature compensation and temperature measurements are possible by plugging a Pt1000 temperature probe into the °C terminals. You can also use an electrode with built-in Pt1000. Its banana plugs should be inserted in the °C terminals. Without Pt1000, the manual temperature compensation is automatically switched on.

Important

- A blinking decimal point warns you for unstable measurements. Wait to read the display!
- Stirring the solution during the measurements promotes the homogeneity and is obligatory!
- The instrument will refuse automatic calibration when the electrode is unstable. Insufficient stirring or a worn electrode may be the cause.

Oxygen measurement

1. Select [O₂] by pressing **MODE**. The display will immediately show the measured value according to the previous calibration. Should you want to recalibrate, press **CAL**.
2. The display shows the air pressure correction and the salinity correction. Select the proper values and press **CAL**. Leave salinity correction to zero unless you are going to measure in heavily salted solutions such as e.g. sea-water

(35 g/l). Select [CALIBRATE], press **CAL** and follow the instructions on the screen until the calibration is finished.

3. The electrode exposed to the air reaches an equilibrium corresponding to the partial pressure of oxygen and thus to saturation in water at the given temperature.
The instrument shows the measured saturation, current, temperature, and will calibrate automatically when readings are stable.
4. After rinsing the electrodes with distilled water, immerse them in the samples and read the display. Stirring the solution during the measurements promotes the homogeneity and is **obligatory!** The advection rate must be at least 10 cm/s.
5. Rinse the electrode always after use and store it in distilled water.

%O₂ measurement

Select [%O₂] by pressing **MODE**. The display will immediately show the measured value according to the previous calibration. Should you want to recalibrate, press **CAL**. Proceed as for mg/l.

GLP

1. Select the desired range by pressing **MODE**.
2. Press **CAL**, select GLP and press **CAL** to display a complete calibration report.

Logging data

1. Press **↓** to store the displayed value in memory. The display shows a next storage address.
2. Select the desired address and press **CAL** to enter the measured value in memory.

Recalling data

1. Press **↑** to recall the stored data. The display shows a list of stored values.
2. Select the desired address to read the stored values.
3. Press **MODE** to return to the normal measurements.

Temperature measurement

1. Select [°C] by pressing **MODE**. Without Pt1000, adjust the manual temperature compensation and proceed by pressing **MODE**. Should you want to recalibrate, press **CAL**.
2. Immerse the Pt1000 in a standard solution of known temperature. Select [CALIBRATE] and press **CAL**. Calibrate to the proper value and press **CAL** again or press **MODE** to reset the factory settings.

Maintenance of Oxygen Electrodes

A dissolved oxygen electrode is active and stable only when polarised! The electrode body has almost unlimited life and requires no maintenance. After prolonged use of the electrode, it may become deactivated. An indication is that the electrode no longer responds correctly to calibration. In this case:

1. Carefully screw off the measuring head.
2. Cautiously remove the precipitated deposits with the aid of filter paper. **Do not use grinding paper or a glass fibre!**
3. Rinse several times with distilled water and shake carefully off the water drops.
4. Take the measuring head, fill it with new electrolyte solution and very slowly screw it onto the electrode while holding it vertically.
5. **Let the electrode rest for a few hours!** The electrode is now ready for use again.

• *Replace the membrane only when damaged, not when calibration is no longer possible!*

Specifications

DISSOLVED OXYGEN	
<i>Range</i>	0...20 mg/l (0...200%)
<i>Resolution</i>	0.05 mg/l (0.5%)
<i>Accuracy</i>	1% ± 1 digit
<i>Calibration</i>	1 point
<i>Temperature Compensation</i>	0...50°C
<i>Salinity Compensation</i>	0...40 ppt
<i>Air Pressure Compensation</i>	800...1200 hPa
TEMPERATURE	
<i>Range</i>	0...100°C
<i>Resolution</i>	0.1°C
<i>Accuracy</i>	0.5°C
<i>Calibration</i>	1 point
INPUTS	
<i>Dissolved Oxygen</i>	BNC
<i>Temperature</i>	2 banana, for Pt1000
DATA-LOGGING	
<i>Memory</i>	300 values + temperature
DISPLAY	
<i>LCD</i>	122x32 pixels
<i>White Backlight</i>	✓
<i>Languages</i>	EN, NL, FR, DE
POWER SUPPLY	
<i>Mains</i>	210...250 VAC, 50/60 Hz
<i>Low Voltage</i>	9...15 VDC
DIMENSIONS	
<i>WxDxH (mm)</i>	157.5x198.9x100.1/ 35.8
WEIGHT	
<i>Meter</i>	400 g

