

Turbidity Meter

860040

Instruction Manual

SPER
SCIENTIFIC

Environmental Measurement Instruments

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INTRODUCTION

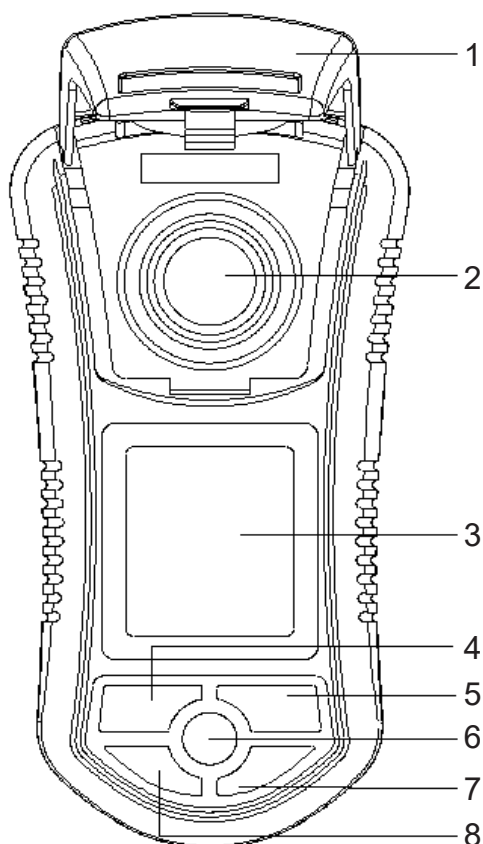
This Sper Scientific Turbidity Meter (model 860040) displays the turbidity level of aqueous solutions on a large LCD screen. This meter can measure numerous different types of aqueous solutions and offers a two-point self-calibration feature that can be performed in under a minute. The meter conveniently displays turbidity in the internationally recognized Nephelometric Turbidity Unit of measure (NTU), used in many industries including the beer/wine, water quality, biological growth, and chemical manufacturing industries.

FEATURES

- Reads turbidity values of aqueous solutions
- Protective chamber with lid to prevent debris from entering
- Maximum and Minimum values
- Portable design for use in the field or laboratory
- Data Hold Function
- Optional DC adapter for field use
- Zero adjustment feature for low turbidity solutions
- Designed to meet ISO 7027 standards

MATERIALS SUPPLIED

- Turbidity meter
- Calibration standards solutions of 0 NTU and 100 NTU
- 2 sampling bottles
- Instruction manual
- 6 AAA batteries
- Carrying case with custom foam interior
- Low Lint Cloth
- Distilled Water for cleaning



FRONT PANEL DESCRIPTION

1. Chamber Lid/protective cover
2. Testing chamber
3. LCD screen
4. Data Hold Button
5. Test / Calibration Button
6. Power Button
7. Zero Button
8. Min/Max Button

SET UP

Battery Installation

This meter uses six AAA batteries. To install the batteries before first use:

1. Unscrew the two screws on the back of the meter. These screws secure the battery cover.
2. Remove the battery cover.
3. Insert six new AAA batteries, ensuring correct polarity.
4. Replace the battery cover and reinstall the screws.

Replace the batteries when the low-battery icon blinks on the LCD.

Note...

Before replacing the batteries, turn the meter off.

Meter On and Off

1. Press **POWER** to turn the meter on/off
2. The meter will automatically turn off after ten minutes of inactivity.

CALIBRATION

Before beginning the calibration procedure, locate the two calibration solutions and keep them close to the meter. If the calibration is not performed quickly, the meter will return to test mode and the calibration will not hold. While this does not damage the meter, the calibration will have to be performed again.

1. Remove the 0NTU and 100NTU bottles from their protective cases. Tighten both caps and shake the bottles gently to ensure they are properly mixed.
2. Clean the outside of both bottles to ensure there are no fingerprints on the glass. Fingerprints or dirt on the glass will alter the readings, so it is critical to handle the bottles by the cap from this point on.
3. Turn the meter on.
4. Press and hold the **TEST/CAL** button until CAL appears on the screen.
5. Let go of the TEST/CAL button. The screen will display 0.00, prompting for the 0NTU standard solution. You will have 20 seconds to perform the next step or the meter will exit calibration mode and return to test mode.
6. Place the 0NTU bottle into the test chamber, lining the vertical white line of the bottle with the white dot on the meter. Close the lid and press the **TEST/CAL** button once. The meter will flash the word CAL on the screen for up to ten seconds.

Note...

If the word Test appears on the screen, you did not perform step 6 fast enough and will need to repeat the process.

7. If the zero point calibration was successful, the meter will stop blinking and display the number 100, prompting for the 100NTU standard solution. Again, you will have 20 seconds to perform this step or the meter will exit calibration mode.

8. Place the 100NTU bottle into the test chamber, lining the vertical white line of the bottle with the white dot on the meter. Close the lid and press the **TEST/CAL** button once. The meter will flash CAL on the screen for up to ten seconds.

Note...

If TEST appears on the screen, you did not perform the 100NTU point fast enough and will need to repeat the process.

9. If the calibration was successful, the screen will stop blinking and display 0.0, indicating that it is ready to test samples.

MEASUREMENT PROCEDURES

For Single Point Readings

1. Pour test sample into one of the two included sample vials.
2. Gently shake the bottle to ensure the sample is properly mixed. If there is sediment in the sample that sinks to the bottom of the vial, the meter will not detect it.
3. Tighten the cap and clean the outside of the sample bottle with a lint free cloth. Be careful not to touch the glass as fingerprints can affect the readings. Handle the sample vial by the cap.
4. Place the sample vial in the test chamber, lining up the white line on the bottle with the white dot on the meter.
5. Press the **TEST/CAL** button once.

For Multi Point Readings

Multi-point mode produces the minimum and maximum values of a set of samples. This is especially useful in the case where there are slight changes in the turbidity of many samples or there is heavy sediment in a single sample. In the case of sediment, you can use this function to get a minimum and maximum reading based on how well the sample is mixed.

Note...

This mode will only provide the minimum and maximum of the samples tested and will not internally store or recall the individual readings within that sample set.

1. Press the **MIN/MAX** button to enter multi-point mode. REC will appear in the upper right hand corner of the meter.
2. Prepare the test sample in the included sample vials and ensure they are clean, dry and free of fingerprints.
3. Place the test sample in the chamber and close the lid.
4. Press the **TEST/CAL** button once. The meter will display the turbidity value of the sample in NTU.
5. Repeat steps 3 and 4 for all samples. The meter can analyze up to 50 samples.
6. Press the **MIN/MAX** button when you are finished with all samples. After pressing the MIN/MAX button, no new values can be added to the set.
7. Press the **MIN/MAX** button as often as needed to display the minimum and maximum turbidity values of the data set in NTU.
8. Press and hold the Min/Max button to exit the Multi-Point mode.
9. After exiting, all values are cleared. Therefore, the next time you enter Multi-Point mode, the meter will only analyze the samples within the new set.

Zero Point Adjustment

This feature is used for low turbidity systems such as well water, tap water, or surface water from lakes and rivers. This method is effective for any solutions whose expected value is <2.0 NTU. The feature allows you to define a custom standard for the zero value. All successive measurements will be offset by this zero value.

Note...

The Zero Adjustment is NOT a calibration. Calibration is performed using the 0NTU and 100NTU solutions as described on page 6.

1. Obtain a sample of your zero standard. This standard should be the lowest turbidity seen in your sample sets. For example, if you were testing a filtration system for drinking water, you would want to obtain a sample from the most successful filtration produced.
2. Place your sample in one of the included test bottles, tighten the cap and ensure the outside of the bottle is free of fingerprints.
3. Place the sample in the test chamber lining up the two white lines and close the lid.
4. Press and hold the **ZERO** button until ZERO appears on the LCD and release the button.
5. The screen will display 0.0 NTU.
6. All readings will be offset by the zero value until the meter is recalibrated or zeroed with the 0NTU standard.

Data Hold

The Minimum/Maximum functions on the meter are disabled during data hold. Also, new readings cannot be taken.

1. Press **HOLD** to freeze the reading on the display. "Hold" appears at the top of the LCD and the reading remains on the display until hold is disabled.
2. Press **HOLD** to return to Normal Mode.

CARE AND MAINTENANCE

- Never wash sample bottles with tap water. The residue left behind can alter readings. Use the included distilled water to clean the sample vials.
- Store the meter with the lid closed to prevent debris from entering the test chamber.
- Periodically wipe the meter with a dry, lint-free antistatic cloth.
- Do not use abrasives, solvents or cleaning agents containing carbon, alcohol or benzenes on the meter.
- Repairs or services not covered in this manual should be performed by qualified personnel only. Please contact Sper Scientific to speak with a technician.
- Periodically wipe the test chamber with a lint free cloth to ensure the internal lens is clean.

SPECIFICATIONS

	Range	Resolution	Accuracy
Turbidity	0 – 49.99 NTU	0.01 NTU	±5% RDG or 0.5 NTU, whichever is greater
	50 – 1000 NTU	1 NTU	±5% RDG or 5 NTU, whichever is greater
Operating Temperature and Humidity	0 - 50°C And less than 85% Relative Humidity		
Power Supply	AAA, 1.5V battery x 6		
Battery Life	250 hours		

TROUBLESHOOTING

ERR 0: If “ERR 0” is displayed during calibration, please try the following steps.

1) Clean the exterior of each calibration NTU sample bottle and wipe down the interior of the test chamber with a soft cloth. Perform the calibration procedure again. If calibration continues to fail, proceed to next step.

2) Clear the stored calibration data. Press and hold the **TEST/CAL** button until CAL appears on the screen. Press the **HOLD** button twice until you reach “CLR”. Press the **TEST/CAL** button to clear the data. Perform the calibration procedure again. If calibration continues to fail, proceed to next step.

3) Replace both the 0 NTU and the 100 NTU standards with fresh standards. If calibration continues to fail, please reach out to Sper Scientific for further assistance.

WARRANTY

Sper Scientific warrants this product against defects in materials and workmanship for a period of **one (1) year** from the date of purchase, and agrees to repair or replace any defective unit without charge. If your model has since been discontinued, an equivalent Sper Scientific product will be substituted if available. This warranty does not cover sample vials, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will void the warranty. To obtain warranty service, ship the unit postage prepaid to:

SPER SCIENTIFIC LTD.

8281 E. Evans Rd., Suite #103

Scottsdale, AZ 85260

(480) 948-4448

The defective unit must be accompanied by a description of the problem and your return address. Register your product online at www.sperwarranty.com within 10 days of purchase.

Please note: The most current version of the manual can always be found at www.sperdirect.com