POCKET DIGITAL REFRACTOMETERS

300050 ~ 300055

INSTRUCTION MANUAL

SPER SCIENTIFIC
Environmental Measurement Instruments

CONTENTS

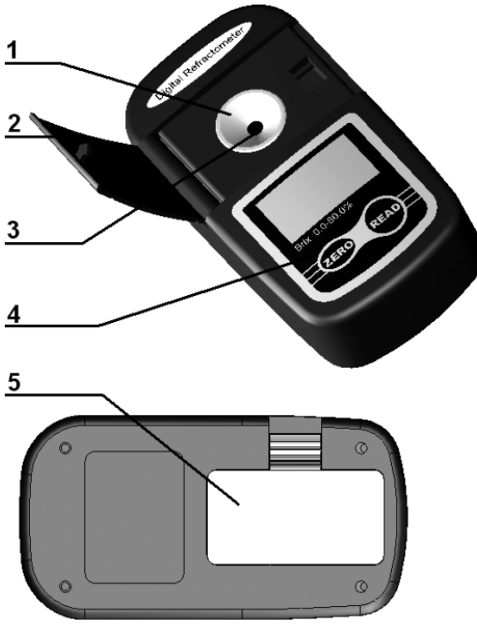
1. INTRODUCTION

Our Pocket Digital Refractometers measure Brix, salinity or other parameters with laboratory accuracy. The digital readout eliminates uncertainties, while the water resistant design facilitates clean ups and protects the electronics from moisture.

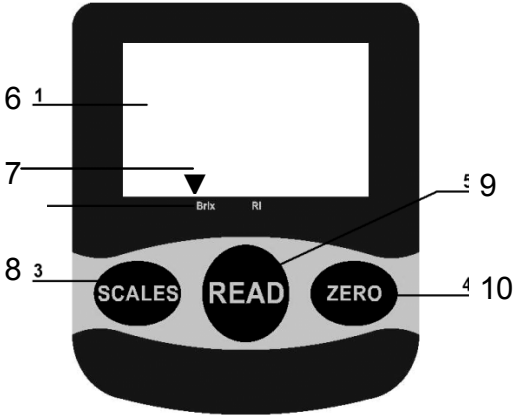
Features:

- Automatic Temperature Compensation
- Zero Calibration
- Automatic shut off
- Instantaneous reading

2. PANEL DESCRIPTION



1. Stainless Steel Sample Plate
2. Cover
3. Prism
4. Keypad
5. Battery Compartment



Keypad for Single-Scale Models

6. Display
7. Active Scale Indicator
8. SCALES button
9. READ button
10. ZERO button

3. NOTES AND PRECAUTIONS

- The refractometer will automatically shut off after about 3 minutes of inactivity.
- After each use, clean the **SAMPLE PLATE** (1) and **PRISM** (3) with distilled water on a soft cloth, and wipe dry.
- If a film develops on the **PRISM** (3) it will repel test samples and affect readings. If this occurs, clean with a mild detergent.
- The prism is easily scratched, never use abrasive cleaning materials.
- Never submerge.
- Avoid spills around the unit.
- Avoid prolonged use or storage in extreme temperatures.
- Do not use in corrosive environments.
- Do not drop or shake the unit.
- Use the protective carrying case to prevent physical damage.

4. CALIBRATION

Calibration should be performed daily before sample testing begins or when you suspect that the reading may be inaccurate. For best results, perform the calibration in a controlled environment of 68°F (20°C).

- Allow the refractometer and the distilled water to acclimate to the ambient environment.
- Clean the **PRISM** (3) before and after every use. There should be no spots or film on the prism.
- Drop at least 1.0 ml of distilled water (0.0) onto the **PRISM** (3).
- Close the **COVER** (2).
- Press the **REA**D (9) button to turn on the refractometer.
- Press the **ZERO** (10) button for 3 seconds to enter calibration mode.
- “CAL” flashes on the display. There will be a red flash in the **PRISM** (3).
- The calibration is complete after “End” is displayed.

5. MEASUREMENT

- Clean the **SAMPLE PLATE** (1) and **PRISM** (3) before and after every use. There should be no film or spots on the prism. If residue remains from a previous test, it will affect the accuracy of the unit.
- When the temperature difference between the ambient temperature and the refractometer is greater than 10°F (5°C), place the refractometer in the lab

and allow it to adjust to the ambient temperature. Allow apx. 30 minutes for every 5°F (10°C)
difference in temperature.

- Press the **READ** (9) button to turn the unit on and display the temperature. This unit features Automatic Temperature Compensation (ATC) within the range of 41 ~ 104°F (5 ~ 40°C), eliminating the need for manual temperature correction.
- Perform a calibration (pg 6) before the day's first use or after extended daily use.
- Fill the **PRISM** (3) with about 1.0ml of the sample solution.
- Close the **COVER** (2).
- Press the **READ** (9) button immediately to obtain a reading. Delays may cause the sample to evaporate.
- Within 1 second, the value is displayed.
- When the reading is under-range, the low indicator (LLL) is displayed. The high indicator (HHH) is displayed when the reading is over-range.

Models with Multiple Scales

- Follow the measurement instructions

(page 6), then press the **SCALES** (8) button and hold the button for 1 second to cycle through the options.

- "- - -" is displayed and the **ACTIVE SCALE** (7) indicator "▼" points to the selected scale.
- With the desired scale selected, press the **READ** (9) button to obtain the results.

Erratic Readings

If the readings are significantly above or below the expected results, consider the following:

- Sample contains more than one dissolved solid. For example, if the sample contains both salt and sugar, a Brix refractometer will not display the true sugar content because the salt content will skew the brix measurement.
- When diluting samples, be sure to use a pure solution such as distilled water.
- Sample contains suspended solids. Filter and thoroughly mix the sample before testing.
- Perform a calibration.
- Replace the battery.

- Outside light can cause erratic readings, make sure to close the **COVER** on the **PRISM** during measurement.
- After about 3000 tests, turn the unit off for 5 to 10 minutes to rest the battery.

6. ZERO CHECKING

Use this function to check the nD value of the zero setting for distilled water.

- Fill the **PRISM** (3) with a standard solution of distilled water (0.0) that is the same temperature as the solution to be tested.
- Close the **COVER** (2).
- Press the **READ** (4) button to turn the refractometer on and obtain a temperature reading.
- Quickly press the **ZERO** (5) button once.
- The nD value of the solution is displayed.
- This information can be viewed at any time to show the last calibration value.

7. BATTERY REPLACEMENT

When the low-battery symbol is displayed, push the tab to open the **BATTERY COMPARTMENT** (5) and replace the 1.5V AAA battery with a fresh alkaline battery.

7. SPECIFICATIONS

Weight	5.3 oz, 150 grams
Dimensions	5" x 2 1/2" x 1 1/4" 120 x 65 x 30 mm
Storage Environment	14 ~ 122°F (–10 ~ 50°C)
Operating Environment	Below 90% RH Below 2000 m sea level 32 ~ 104°F (0 ~ 40°C)
Battery Life	Approx. 8000 tests
Included	Protective Case 1.5V AAA Battery Distilled Water Transfer-Pipette

Model	Scale	Range	Res.	Accuracy
300050	Be'	28 ~ 48	0.1%	±0.2%
	Water	10 ~ 45%		
	Brix	40 ~ 95%		
300051	Brix%	0 ~ 65%		
300052	Brix%	40 ~ 95%		
300053	Brix%	0 ~ 95%		
300054	Salinity%	0 ~ 28%		
	Salinity ppt	0 ~ 280 ppt	1 ppt	±2 ppt
300055	Cleaner	(14) ~ (-40)°F	0.1°F	±2.0°F
	Ethylene Glycol	(32) ~ (-50)°F		
	Propylene Glycol	(32) ~ (-50)°F		
	Battery	1.000 ~ 1.500 sg	0.001 sg	±0.005 sg
Use pure distilled water as the calibration solution for all models.				

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 probes, batteries, battery leakage, or damage resulting from accident, tampering, misuse, or abuse of the product. Opening the meter to expose its electronics will break the waterproof seal and void the warranty. To obtain warranty service, ship the unit postage prepaid to: