

Atago 2311 MASTER-ALPHA

Atago Master-Alpha Handheld Refractometer User Manual

Model: 2311 MASTER-ALPHA

INTRODUCTION

This manual provides essential information for the proper use, maintenance, and troubleshooting of your Atago Master-Alpha Handheld Refractometer. Please read this manual thoroughly before operating the device to ensure accurate measurements and prolong its lifespan.

The Atago Master-Alpha Handheld Refractometer is designed for measuring the concentration of various solutions, particularly the Brix percentage in fruits, beverages, and canned goods. It is also suitable for determining the total solid content of syrups, vinegar, and sauces, and for quality control in agricultural and manufacturing processes.



Figure 1: Atago Master-Alpha Handheld Refractometer. This image shows the compact, pen-like design of the refractometer, with its clear prism cover and the main body featuring the Atago logo.

SAFETY PRECAUTIONS

- Do not immerse the entire unit in water, despite its IP65 rating, to prevent damage to internal components.
- Avoid dropping the refractometer or subjecting it to strong impacts.
- Do not expose the prism to abrasive materials or harsh chemicals that could scratch or damage its surface.
- Store the device in a clean, dry place away from direct sunlight and extreme temperatures.
- Keep out of reach of children.

COMPONENTS

The Atago Master-Alpha Refractometer consists of the following key components:

1. **Prism:** The optical surface where the sample is placed.
2. **Daylight Plate:** A clear cover that protects the prism and spreads the sample evenly.
3. **Eyepiece:** Used to view the measurement scale.
4. **Diopter Adjustment Ring:** For focusing the eyepiece.
5. **Calibration Screw:** Used for zero-point adjustment.
6. **Rubber Grip:** Provides a secure hold.

SETUP

Unpacking and Inspection

- Carefully remove the refractometer from its packaging.
- Inspect the device for any signs of damage during transit. If damage is found, contact your supplier immediately.
- Ensure all accessories (if any) are present.

Initial Calibration (Zero-Point Adjustment)

Before first use, or if accuracy is in doubt, calibrate the refractometer using distilled water.

1. Ensure the prism and daylight plate are clean and dry.
2. Open the daylight plate and place a few drops of distilled water onto the prism.
3. Close the daylight plate gently, ensuring no air bubbles are trapped and the water spreads evenly.
4. Point the refractometer towards a bright light source (e.g., daylight or a lamp).
5. Look through the eyepiece. Adjust the diopter ring until the scale is in sharp focus.
6. The boundary line between the blue and white fields should align precisely with the "0" mark on the Brix scale.
7. If it does not, use the provided screwdriver to turn the calibration screw until the boundary line is exactly at "0".
8. Wipe the distilled water from the prism and daylight plate with a soft, clean cloth.

OPERATING INSTRUCTIONS

Follow these steps for accurate measurement:

1. Ensure the prism and daylight plate are clean and dry.
2. Open the daylight plate.
3. Place 2-3 drops of the sample liquid onto the prism.
4. Gently close the daylight plate. The liquid should spread evenly across the prism surface without air bubbles.
5. Point the refractometer towards a bright light source.
6. Look through the eyepiece. The boundary line between the blue and white fields indicates the Brix value on the scale.
7. Read the value where the boundary line crosses the Brix scale.
8. After each measurement, clean the prism and daylight plate thoroughly with a soft, damp cloth and then dry them.

Automatic Temperature Compensation (ATC)

The Atago Master-Alpha features Automatic Temperature Compensation (ATC), which automatically adjusts readings for sample temperatures between 10°C and 30°C (50°F and 86°F). This eliminates the need for manual temperature

correction, ensuring accurate results even when sample temperatures vary.

MAINTENANCE

Cleaning

- Always clean the prism and daylight plate immediately after each use to prevent sample residue from drying and affecting future measurements.
- Use a soft, lint-free cloth dampened with water. For stubborn residues, a mild soap solution can be used, followed by rinsing with distilled water.
- Do not use abrasive cleaners, solvents, or harsh chemicals as they can damage the optical components.
- Ensure the prism and daylight plate are completely dry before closing the daylight plate or storing the device.

Storage

Store the refractometer in its protective case (if provided) in a cool, dry, and dust-free environment. Avoid areas with high humidity, extreme temperatures, or direct sunlight.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Scale is blurry or out of focus.	Eyepiece not adjusted.	Adjust the diopter adjustment ring until the scale is clear.
Reading is inconsistent or inaccurate.	Prism or daylight plate is dirty; insufficient sample; air bubbles in sample; refractometer is out of calibration.	Clean the prism and daylight plate; ensure sufficient sample is applied; re-calibrate the refractometer using distilled water.
Boundary line is not sharp.	Insufficient light; sample not spread evenly.	Point towards a brighter light source; re-apply sample ensuring even spread without air bubbles.

SPECIFICATIONS

Feature	Detail
Model	2311 MASTER-ALPHA
Brix Range	0.0 to 32.0%
Accuracy	±0.2% Brix
Resolution	0.2% Brix
Temperature Compensation	Automatic Temperature Compensation (ATC) 10°C to 30°C (50°F to 86°F)
Material	Polybutylene terephthalate (PBT) thermoplastic
Ingress Protection (IP) Rating	IP65 (Dust tight and protected against water jets)
Package Dimensions	8.5 x 1.89 x 1.61 inches

Feature	Detail
Weight	9.17 ounces
Manufacturer	Cole-Parmer

WARRANTY AND SUPPORT

Specific warranty details for the Atago Master-Alpha Refractometer are typically provided with the product packaging or can be obtained from your point of purchase. It is recommended to retain your proof of purchase for warranty claims. For technical support, service, or inquiries regarding your Atago product, please contact the authorized distributor or the manufacturer, Cole-Parmer, directly. Contact information can usually be found on their official websites or in the product documentation.

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This manual is for informational purposes only. Specifications are subject to change without notice.