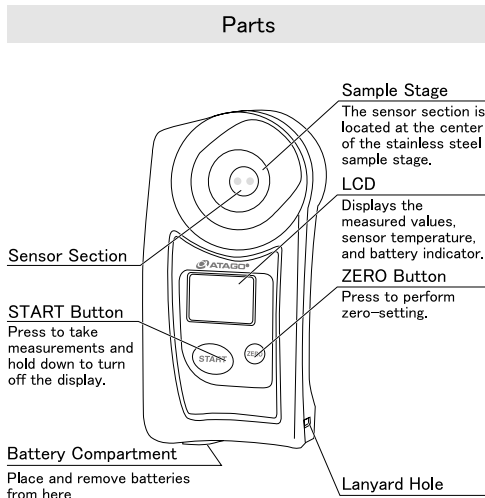




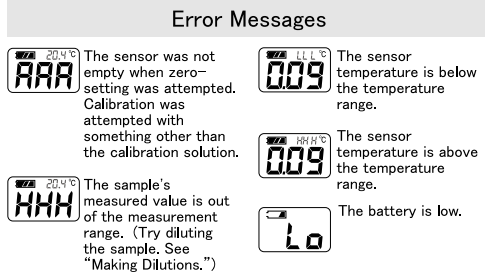
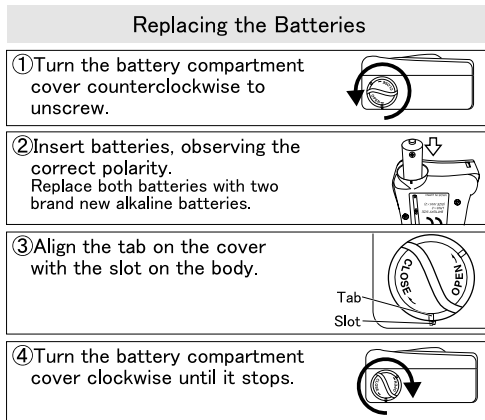
Read and follow all safety instructions before operating the instrument.



Contents

- Main unit1
- Instruction Manual (this book)1
- Calibration Report1
- AAA batteries2

※AAA alkaline batteries are included. Remove the white strip from the battery compartment before inserting the batteries.



Sample Preparation

Drinkable as is (less than 6% Brix)
⇒No dilution is necessary

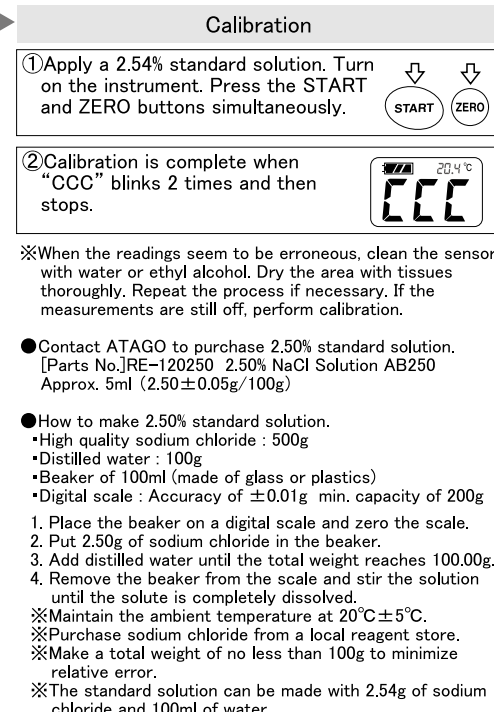
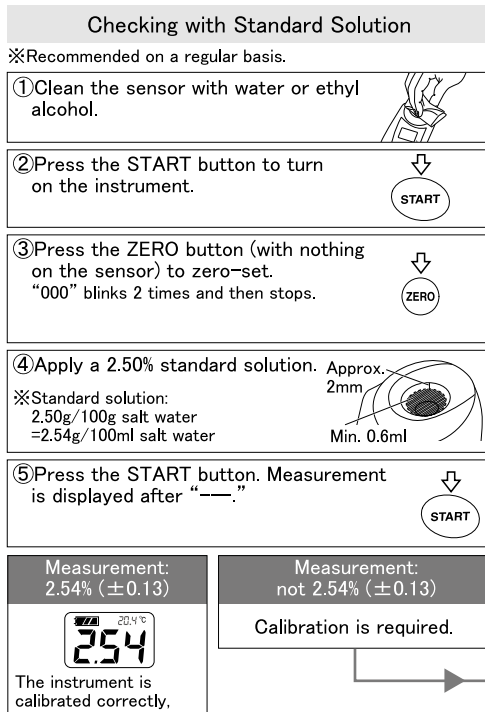
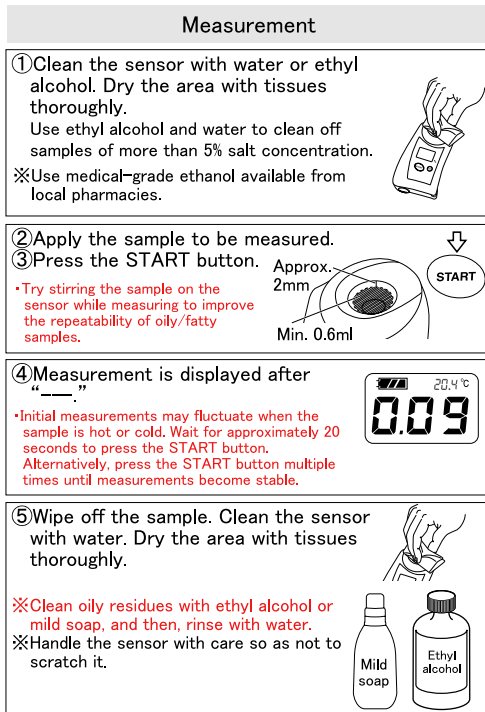
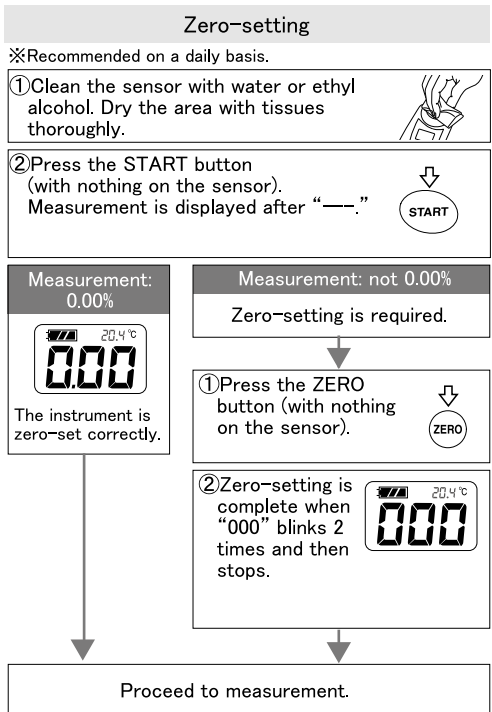
Liquid condiments (over 6% Brix, over 10% salt, and high in non-salt components)
Soy sauce, Worcester sauce, etc.
⇒Please dilute.
☞ See “Making Dilutions”

Paste
Mayonnaise, miso paste, ketchup, etc.
⇒Please dilute.
☞ See “Making Dilutions”

Solid food
Pickles, ham, cheese, chips, etc.
⇒Please mince/grind and dilute.
☞ See “Making Dilutions”
※Wait for approx. 5 minutes for the solids to settle to the bottom and measure the clear liquid on top.

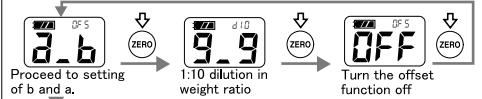
Measurement Examples
Tomato puree 1.7%
Ketchup 3.0%
BBQ sauce 4.8%
Oyster sauce 9.4%
Salmon 2.4%
Salted cod roe 5.2%
Potage 1.2%
Miso soup 0.9%
Soy sauce 13.0%
Mayonnaise 1.6%
Pickled radish 3.6%
Pickles 1.7%
Ham 1.1%
Sausage 0.8%
Noodle soup 1.4%
Curry 1.6%
Gouda 0.9%
Butter 0.1%
Crackers 2.3%
Chips 1.4%

(Test data by ATAGO)



Offset Function

- Hold down ZERO while it is turned on.
- Select the offset function and press the START button to confirm.



For addition/subtraction (b) [Range: -10.00 to +10.00] No plus sign will be displayed.

- Press ZERO to select either addition (+) or subtraction (-).
- Press START to confirm.

Enter the addition/subtraction number. ZERO to change the number: 0, 1, 2, ..., 8, 9, A, 0, 1, 2, ...

START to confirm and move to the next decimal place. When the 1st place is confirmed with "A," the number selections for the decimal places are skipped.

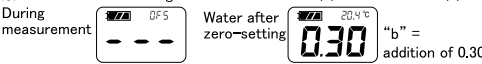
Press START to confirm the addition/subtraction number. Next is to program a coefficient.

For coefficient (a) [Range: 0.01 to 10.00]

- Enter the coefficient.
- Press START to confirm the coefficient.

When setting addition/subtraction (b) and coefficient (a), the display range depends on b and a.

During measurement, the display shows "A" for addition and "-" for subtraction.



Making Dilutions ① Volume ratio

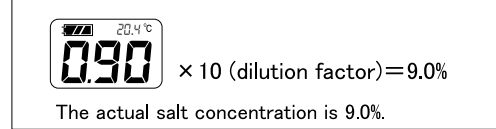
Actual salt concentration = Measurement value × Dilution factor
Soy sauce, Worcester sauce, etc. (approx. 30 to 40% Brix)

- Dissolve 10ml of sample in 90.0ml of water. (Volume ratio: 1:10)
Total volume 100ml
(Water 90ml)
Sample 10ml
Stir until the sample is dissolved completely.

- Measure the dilution.
Approx. 2mm
Min. 0.6ml

- Multiply the reading by 10 (dilution factor).

Example: A 10% dilution measures 0.90%



- Offset feature use #1
Input a coefficient (a) of 10, and the value multiplied by 10 will be displayed.



Making Dilutions ② Weight ratio

The actual salt concentration differs from the measurement value multiplied by the dilution rate.
Soy sauce, Worcester sauce, etc. (approx. 30 to 40% Brix)

- Dissolve 10g of sample in 90.0g of water. (Weight ratio: 1:10 only)
Total weight 100g
(Water 90g)
Sample 10g
Stir until the sample is dissolved completely.

- Offset feature use #2
Select the weight ratio 1:10 for dilution.
Hold down ZERO → Select → Confirm the selection

- Measure the dilution.
Approx. 2mm
Min. 0.6ml

- Actual salt concentration before dilution is displayed. 9.0 g/100ml

At the 1:10 dilution in weight ratio the measurement range is 0.0 to 33.0% and the resolution is 0.1.
For this function the same measurement method is used with the model PAL-ES3.

Measurement Principles

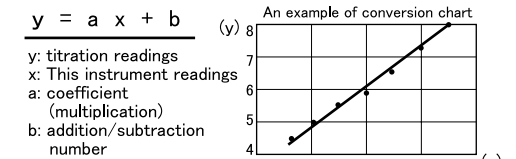
This instrument uses the electric conductivity method to measure and display salt concentrations % (g/100ml). When complex samples containing ingredients other than salt are measured, the conductivity readings may be different from readings by other methods. Always dilute a complex sample to 10% by weight when its Brix exceeds 6%.

Brix is a measurement of the total dissolved solids (TDS) in a solution and measured by a refractometer. Check the Brix of your sample with a refractometer. For optimum results, it is recommended to dilute complex samples that are 6% Brix or higher.

Discrepancies with Mohr Method

Due to the difference in measurement principles, readings from the conductivity salt meters may not match up exactly with the readings by titration for certain samples. However, correlation between the two testing methods can be seen.

Offset feature use #3
Create a conversion chart between the two testing methods.



ATAGO's instruments are rigorously inspected to ensure each unit meets the highest standards of quality assurance.

ATAGO CO., LTD.
Headquarters: The Front Tower Shiba Koen, 23rd Floor
2-6-3 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan
TEL: 81-3-3431-1943 overseas@atago.net http://www.atago.net/

ATAGO U.S.A., Inc.
TEL: 1-425-637-2107 customerservice@atago-usa.com

ATAGO INDIA Instruments Pvt. Ltd.
TEL: 91-22-28544915 / 40713232
customerservice@atago-india.com

ATAGO (THAILAND) Co., Ltd.
TEL: 662-982-8718-9 customerservice@atago-thailand.com

ATAGO BRASIL Ltda.
TEL: 55 16 3916-6000 customerservice@atago-brasil.com

ATAGO ITALIA S.r.l.
TEL: 39 02 36557267 customerservice@atago-italia.com

ATAGO CHINA Guangzhou Co., Ltd.
TEL: 86-20-38108256 info@atago-china.com

ATAGO RUSSIA Ltd.
TEL: 7-812-339-20-02 info@atago-russia.com

Safety Precautions

Read and follow all safety instructions before operating the instrument.

WARNING

- When measuring hazardous materials, use proper safety procedures, materials, and clothing to avoid personal injury. Anyone handling hazardous materials should understand its properties and its safety requirements.
- If the instrument is dropped or subjected to a strong impact, contact your supplier for inspection.
- Do not attempt to repair, modify, or disassemble the instrument.

CAUTION

- Before use, carefully read the instruction manual and fully understand the function and operation for each part of the instrument.
- ATAGO is not liable for any loss and damage caused by the measurement and use of this instrument.
- If this instrument is used to measure highly acidic samples, the sensor section and sample stage may be damaged, resulting in inaccurate measurements.
- Do not use any metal tools when applying sample to the sensor section. The metal can damage the sensor section. If the sensor section is scratched or damaged, inaccurate measurements will occur.
- When the unit needs to be washed, use cold water at a temperature not exceeding 30°C.
- Only use the specified battery type. Observe proper polarities, properly aligning the anodes and cathodes.
- Do not leave the instrument in a location exposed to direct sunlight or near a heat source for any extended period of time.
- Do not change the ambient temperature of the instrument suddenly.
- Do not place the instrument where it will be subject to strong vibrations.
- Do not use the instrument where there are excessive amounts of dust.
- Do not store the instrument in an extremely cool area.
- Do not set or drop heavy objects on top of the instrument.
- Loosen the battery compartment cover for air transportation.
- The instrument is water-resistant, not waterproof, and should not be submerged.

Storage and Maintenance

- Store the instrument in a dry place away from direct sunlight. Exposure to humidity may cause condensation inside, and exposure to direct sunlight may cause the plastic to warp.

- Do not use organic solvents (paint thinner, benzene, gasoline, etc.) on the plastic body case.

- Cleaning**
Clean and dry the sensor area thoroughly after use, leaving no sample residues or water.
For oily samples:
Remove oily residues with ethyl alcohol or mild soap, and then, rinse with water.
- Storage**
Store the instrument away from direct sunlight at a stable temperature with as little fluctuation as possible.

- When the O-ring on the battery compartment cover is dirty or damaged, the water resistance may be compromised. Lubricate the O-ring regularly.

Repair and Warranty

The instrument is warranted for one year from the date of purchase. This warranty is void if the instrument shows evidence of the following. Send the included batteries as well if they are still in use.

- Having been disassembled by unauthorized personnel
- Damages to the sensor section and/or sample stage
- Water damage or having been dropped
- Having been misused and/or operated outside the environmental specifications
- Leakage from batteries other than those included with the unit

Repair services are available for a fee after the warranty expires. Contact an ATAGO authorized service center for service and support.

Specifications

Measurement range	0.00 to 10.0% (g/100ml) of salt concentration 5.0 to 100°C
Resolution	0.01% for salt concentration of 0.00 to 2.99% 0.1% for salt concentration of 3.0 to 10.0% 0.1°C
Measurement accuracy	Displayed value ±0.05% (for salt concentration of 0.00 to 0.99%) Relative precision ±5% (for salt concentration of 1.00 to 10.0%) ±1°C
Sample temperature	5 to 100°C
Ambient temperature range	10 to 40°C
Sample volume	At least 0.6ml
Measurement time	Approx. 3 seconds
Power supply	Two (2) AAA alkaline batteries
Battery life	Approx. 8,000 measurements (when using alkaline batteries)
International Protection class	IP65
Dimensions and weight	55(W)×31(D)×109(H)mm, 100g (main unit only)