

What's this?

Q&A

1. What can this instrument measure?

Various types of food – soups, sauces, condiments, dressings, fish, deli meats, brine, dairy, crackers, chips, and more – can be measured.

2. How do I measure my food?

Different types of food may require different preparation for measurement. Please refer to "Measurement Method."

3. Can I use tap water for dilutions?

Distilled water is the best, but tap water may be used. Tap water may affect the readings slightly (approx. 0.01%). Do not use mineral water or ion water as they will affect the readings.

4. How do I clean it?

The entire body can be washed under running water. Use soap to remove persistent residues. Clean greasy residues with ethyl alcohol and rinse with water.

5. The readings are unstable.

Try stirring the sample on the sensor while measuring.

6. Can it measure cold/hot food?

Leave the sample on the sensor for 30 seconds before measurement. Alternatively, take multiple readings until the readings stabilize.

7. How often does it need to be calibrated?

Zero-set the instrument at the beginning of each day. Clean the sensor thoroughly and press ZERO with nothing on it. For official calibration, please contact ATAGO.

8. The readings seem wrong.

Apply water or ethyl alcohol on the sensor and wipe it off with tissue paper. Repeat the process a few times if using water. If this does not solve the problem, reference set with a 2.5% standard salt solution.

9. What is the storage instruction?

Store in the box that the instrument originally came in.

■ Families that season their miso soup lightly — 383g/year



■ Families that season their miso soup heavily — 657g/year

1 Tablespoon = 15g
One pile of salt = 100g

⇒ The average yearly intake of sodium/salt for a Japanese citizen is **3800g**

Japan, a country renowned for its longevity (average life expectancy of 84 years old) consume this much salt.

Around the world, most families have special recipes for a favorite dish. In Japan, every family has their own miso soup recipe. Individual preference in strength of miso soup's flavor can make a significant difference in salt consumption. A lightly seasoned miso soup can contain around 0.7g of salt in 100g of soup whereas a heavily seasoned miso soup may contain 1.2g of salt in 100g of soup. This difference in salt, when miso soup is consumed daily, adds an additional 274 grams (approx. 18 tablespoons) per year. Salt is a vital ingredient that brings out the flavor of food. Excessive salt consumption, however, may pose various health risks such as hypertension.

A flavorful, savory miso soup can be made by balancing the amount of dashi (a Japanese soup stock) and the amount of miso. The proper balance reduces the need to add more miso thus reducing salt in the final dish.

Whether for your family, guests, or customers, promoting a healthy low-sodium lifestyle is simply a few drops away with the PAL-sio.

All ATAGO refractometers are designed and manufactured in Japan.

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* Specifications and appearance are subject to change without notice.



HACCP GMP GLP

ATAGO products comply with HACCP, GMP, and GLP system standards.

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Pocket "Pocket" Salt Meter

PAL-sio
(Japan model of PAL-SALT)

“I have never used a salt meter.”

A wide variety and price range of salt meters are available online. ATAGO is your dietary salt reduction partner. Learn how the PAL-sio is unlike any other salt meters on the market.

“I have used/am currently using a salt meter.”

Users of conventional salt meters are often concerned with the durability of the instruments as well as the repeatability and accuracy of the readings. ATAGO's PAL-sio was developed to satisfy the demand for a reliable product.

Why choose ATAGO?

Longevity

“My salt meter broke after a short while.”

Conventional gold-plated electrodes may be scratched/worn off over time, which causes erroneous readings.

The electrode of the PAL-sio is made of titanium, which is more resistant than gold. Equipped with the full-body water resistance, it can withstand harsh environments, such as an industrial kitchen.

ATAGO's resolve to create an instrument distinguished from other flimsy, practically disposable salt meters on the market has been realized.

Whenever you have questions or problems, our technical support services team will be happy to assist you.

Reliability

“The readings fluctuate with hot, oily soups.”

At first glance, dip-type salt meters may seem easy to use. However, users of those dip-type salt meters are often unhappy with inaccurate readings caused by unreliable temperature compensation.

On the other hand, the PAL-sio has a basin-shaped sensor on which food samples are placed.

It will provide reliable readings for any sample, including hot, oily soups.

Calibration

“I am not sure if my salt meter is measuring accurately.”

Calibration is the inspection of an instrument to make sure that it is performing as it should.

Is your salt meter calibratable? The PAL-sio is. When the readings seem to be off, it can be checked and corrected for any errors by you.

ATAGO is also a JCSS-approved manufacturer and provides full calibration services.

From manufacturing to sales and support, ATAGO has been and will continue walking side by side with our customers.

Specifications

PAL-sio	Cat.No.4100
Measurement range	0.00 to 10.0% (g/100g) 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)

Off Set function

Features the offset function which enables the programming of a coefficient to automatically convert measured values. Able to directly display measurement value correlated to other principles, such as titration. By setting the dilution factor, the original salt concentration can be directly displayed.

Simple 3-second Measurement



- 1 Apply**
Apply the samples to be measured onto the sample stage.
- 2 START**
Press the START button.
- 3 Result**
Measurement value is displayed in 3 seconds.

Parts



“Pocket” Salt Meter Cat.No.4100
PAL-sio **NEW**
(Japan model of PAL-SALT)

Measurement Method

Depending on the type of sample (food to be measured), different preparation may be required.

Liquids that are drinkable as is

Thin and watery liquids, such as broth, can be measured by placing a few drops directly on the sensor and pressing START.

Thick liquids, pastes

Sauces, soup bases, gravies need to be diluted to 10%. If it is not drinkable as is (anything above 6% Brix with a refractometer), dilute it. The PAL-sio measures the conductivity of electrolytes. The thicker a solution is, the more tightly the molecules are positioned, and therefore, the less conductive and the more difficult it is to measure. The readings, if not diluted, may be lower than the actual salt content.

Salty foods (above 10% salt)

Products that contain more than 10% salt, such as pickle brine, need to be diluted. For example, the 10% dilution of a 12% salt brine will measure 1.2%, and the 20% dilution will measure 6%. Adjust the dilution factor so that the salinity falls within the measurement range.

Solid foods

Mince/grind/crush solid foods, such as deli meats, fish, and potato chips, and dilute with water to 10%. Allow the salt to leach out of the food for approximately 30 minutes. Measure the salinity of the water and multiply the reading by 10. The higher in salt the food is, the longer it will take for the salt to be drawn out into water. Set a soaking period that works for each food.

Oily/fatty food

If the readings fluctuate when measuring oily/fatty samples, try stirring the sample on the sensor while measuring for more stable readings. When measuring the salinity of oil-packed products, extract the sample from the oil and allow excess oil to drain. Mix 10 grams of sample with 90 grams of water to create a 10% dilution. Mix or shake very well and let settle. Residual oil should float to the top of the container. Take a sample from below the oil layer and place on the sensor. Multiply the displayed reading by 10 to obtain the salt concentration of the original sample.

Calculating Salt Content from Nutrition Label

The sodium (Na) content is indicated on most packaged food products. Calculate the salt (NaCl) content by the following formula:

$$\text{NaCl (g)} = \text{Na (mg)} \times 2.54 / 1000$$

Chloride Titration (Mohr Method)

Titration with silver nitrate measures chloride ion concentrations. The PAL-sio uses conductivity. Both methods measure the salt %, but the measurement principles are different, and therefore, the readings may not always match up.

Always measure your food and water by weight.

- 1. Weigh the food.**
Place approximately 10g of food in a container on a scale.
- 2. Dilute.**
Add water until the total weight is 10 times the amount of food.
- 3. Stir.**
Mix well.

Preparing Solid Foods *Varies by type

Crushing
Crackers and chips are best crushed up.

Dicing
Deli meats and pickles are best chopped up.