Manual

Digital Hand-held "Pocket" Salt Meter

PAL-SALT Mohr

Cat No 4251

The warranty period extension method 1 year \rightarrow 2 years

The warranty period will be extended from 1 year to 2 vears when OR code you register customer information. ATAGO Logger NFC can also be downloaded at the same time

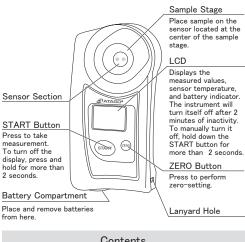
Trouble scanning the code? Access this link

http://www.atago.net/ur/



Read and follow all safety instructions before operating the instrument.

Parts



Contents

- •Main unit ••••••1 •Instruction Manual (this book)
- AAA batteries

XAAA alkaline batteries are included. Remove the tape from the battery compartment before inserting the hatteries

Replacing the Batteries

1)Insert a coin in the groove on the battery compartment cover. Turn the coin counterclockwise to remove the cover.



2)Insert batteries, observing the correct polarity.



3 Align the cover and push it down.



4 Close the battery compartment cover by pushing the cover in with a coin in the groove and turning it clockwise until it stops.



Error Messages



The sensor was not empty when zero-setting was attempted. Calibration was attempted with

something other than the calibration solution. The sensor is dirty. Reference "Cleaning

The sample's measured

measurement range

value is out of the

(Try diluting the sample, See

'Making Dilutions.")



The sensor temperature is above the temperature range

temperature is below

the temperature range



The battery is low.

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) Sov sauce, Worcester sauce, etc. ⇒Please dilute.

See "Making Dilutions"

Paste

Mayonnaise, miso paste, ketchup,

⇒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 1.8%

Ketchup 3.1%

BBQ sauce 5.0%

Ovster sauce 10.0% Salmon 2.5% Salted cod roe 5.4% Potage 1.2% Miso soup 0.9% Sov sauce 14.2% Mayonnaise 1.7% Pickled radish 3.7% Pickles 1.8% Ham 1.1% Sausage 0.8% Noodle soup 1.5% **Curry 1.7%** Gouda 0.9% Butter 0.1% Crackers 24% Chips 1.5%

(Test data by ATAGO)

Zero-setting

*Recommended on a daily basis.

- 1)Clean the sensor and sample stage thoroughly.
- 1) Clean with a mild soap, and rinse well with
- 2) Dry the area with tissues thoroughly.





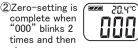


The instrument is zero-set correctly.

Measurement: not 0.00% Zero-setting is required.

(ZERO)

1)Press the ZERO button (with nothing on the sensor).



stops.



Measurement

- ①Make sure that the sensor is clean.
- *Clean the sensor area if soiled. Reference "Cleaning"



START

2 Apply the sample to be measured.

3Press the START button.





Approx.

4 Measurement is displayed after

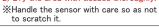
Initial measurements may fluctuate when the sample is hot or cold. Wait for approximately 20 seconds to press the START button. Alternatively, press the START button multiple times until measurements become stable



Cleaning

Clean the sensor and sample stage thoroughly.

- 1) Clean with a mild soap, and rinse well with water
- 2) Dry the area with tissues thoroughly.





Checking with Standard Solution

- *Recommended on a regular basis
- (1)Clean the sensor and sample stage thoroughly.
- 1) Clean with a mild soap, and rinse well with water. 2) Dry the area with tissues thoroughly.
- 2)Press the START button to turn on the instrument.



3)Press the ZERO button (with nothing on the sensor) to zero-set. "000" blinks 2 times and then stops.



(4) Apply a 2.50% standard solution. Approx.

*Standard solution: 2.50g/100g salt water =2.54g/100mL salt water



5)Press the START button. Measurement is displayed after "---



Measurement: $2.54\% (\pm 0.13)$



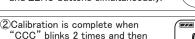
The instrument is calibrated correctly

Measurement: not 2.54% (± 0.13)

Calibration is required

Calibration

1) Apply a 2.50% standard solution. Turn on the instrument. Press the START and ZERO buttons simultaneously.





仑

START

亇

ZERO

*When the readings seem to be erroneous, clean the sensor with water or ethyl alcohol. Dry the area with tissues thoroughly. Repeat the process if necessary. If the measurements are still off, perform calibration.

- Contact ATAGO to purchase 2.50% standard solution. [Parts No.]RE-120250 2.50% NaCl Solution AB250 Approx. 5mL $(2.50 \pm 0.05g/100g)$
- ■How to make 2.50% standard solution.
- *High quality sodium chloride : 500g
- Distilled water: 100g

relative error.

stops.

- ·Beaker of 100mL (made of glass or plastics)
- Digital scale: Accuracy of ±0.01g min. capacity of 200g
- 1. Place the beaker on a digital scale and zero the scale.
- 2. Put 2.50g of sodium chloride in the beaker.
- 3. Add distilled water until the total weight reaches 100.00g. 4. Remove the beaker from the scale and stir the solution until the solute is completely dissolved.
- Maintain the ambient temperature at 20°C±5°C.
- XPurchase sodium chloride from a local reagent store. *Make a total weight of no less than 100g to minimize
- *The standard solution can be made with 2.54g of sodium chloride and 100mL of water.

Offset Function

THold down ZERO for approx, 5 seconds while it is turned on. 2)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 3Press ZERO to select either addition (b) or subtraction (-b). 4)Press START to confirm.

5 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.

6)Press START to confirm the "R" appears in addition/subtraction number. Next is to program a coefficient.

the 1st place only, and it



100

be displayed.

For addition, only

"Ь" will appear

Ġb.

For coefficient (a) [Range: 0.01 to 10.00] 7)Enter the coefficient.

Refer to the step 5.

. WARNING

∴CAUTION

measurements

exceeding 50°C.

vibrations

submerged

your supplier for inspection.

8 Press START to confirm the coefficient.

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

During



Water after zero-setting

Safety Precautions

Read and follow all safety instructions before operating the instrument.

·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

*If the instrument is dropped or subjected to a strong impact, contact

*Before use, carefully read the instruction manual and fully understand

*If this instrument is used to measure highly acidic samples, the sensor

section is scratched or damaged, inaccurate measurements will occur.

Only use the specified battery type. Observe proper polarities, properly

• Do not leave the instrument in a location exposed to direct sunlight or

•Do not use the instrument where there are excessive amounts of dust

The instrument is water-resistant, not waterproof, and should not be

• Do not change the ambient temperature of the instrument suddenly

• Do not place the instrument where it will be subject to strong

When the unit needs to be washed, use water at a temperature not

section and sample stage may be damaged, resulting in inaccurate

•Do not use any metal tools when applying sample to the sensor

near a heat source for any extended period of time

•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.

section. The metal can damage the sensor section. If the sensor

•Do not attempt to repair, modify, or disassemble the instrument

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.

aligning the anodes and cathodes.



Making Dilutions (1) Volume ratio

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

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

(2) Measure the dilution.



(3) Multiply the reading by 10 (dilution factor).

Example: A 10% dilution measures 0.90%



 \times 10 (dilution factor)=9.0%

The actual salt concentration is 9.0%.

Offset feature use #1

Input a coefficient (a) of 10, and the value multiplied by 10 will be displayed.

Displayed value



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 the sensor and sample stage thoroughly 1) Clean with a mild soap, and rinse well with

2) Dry the area with tissues thoroughly

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 O-ring Lubricate the O-ring regularly.

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)

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

2)Offset feature use #2

Select the weight ratio 1:10 for dilution.



3 Measure the dilution.



4)Actual salt concentration before dilution is displayed.



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.

XFor this function the same measurement method is used with the model PAL-ES3.

Repair and Warranty The product is in conformity with the requirements of the

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

Renair 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 0.01% for salt concentration of 0.00 to 2.99% Resolution 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%) Sample temperature 5 to 100°C Ambient temperature range 10 to 40°C Sample volume At least 0.6mL Measurement time Approx. 1 seconds Backlight The backlight stavs on for 30 seconds after any button is pressed. Maximum number of data history 100 Output NFC Forum Type 4 Tag ISO/IEC 14443 Type A Date ,Salt [g/100g],Temp [degC] Output category

(e.g.) 2021/03/17 09:30:45, 2.53, 20.4 Power supply Two (2) AAA alkaline batteries Battery life Approx. 8,000 measurements (when using alkaline batteries) International Protection class Dimensions and weight 55(W) × 31(D) × 109(H)mm,100g (main unit only)

FMC Directive 2004/108/FC

3.5 4.5 5.5

Measurement Principles

When complex samples containing ingredients other than salt

This instrument uses the electric conductivity method to

are measured, the conductivity readings may be different

Always dilute a complex sample to 10% by weight when its

Brix is a measurement of the total dissolved solids (TDS) in

a solution and measured by a refractometer. Check the Brix

of you sample with a refractometer. For optimum results, it

is recommended to dilute complex samples that are 6% Brix

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,

Create a conversion chart between the two testing methods.

An example of conversion chart

6.5

correlation between the two testing methods can be seen.

measure and display salt concentrations % (g/100mL).

from readings by other methods.

Brix exceeds 6%.

or higher.

Offset feature use #3

v = a x + b

v: titration readings

(multiplication)

b: addition/subtraction

a: coefficient

number

x: This instrument readings

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

⊘'ATAGO CO"LTD.

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