

## How to Get Extended Warranty 1 year → 2 years

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

Trouble scanning the code? Access this link <https://www.atago.net/ur/index.php?l=en>



QR code



Digital Hand-held  
“Pocket” Fish fillet salinity meter

# PAL-Fish Fillets

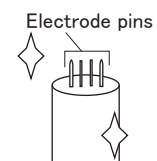
Cat. No. 4225

Instruction Manual  
**ATAGO®**

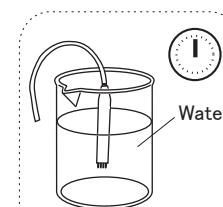


Thank you for purchasing the instrument.  
Before operating, read this instruction manual carefully to understand its contents.  
Keep the manual with the instrument for future reference.

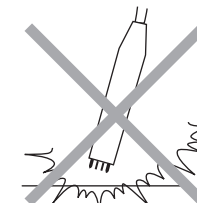
## Measurement Tips



Make sure the electrodes are always clean.

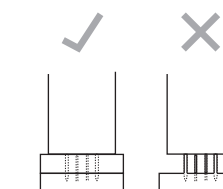


If the measured value is incorrect, soak it in water for 30 minutes to remove buildup.



Do not damage the electrodes

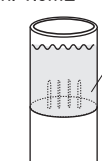
Do not bend or damage the electrodes.  
Put on the cap after use.



Completely cover the electrodes with sample

\* Do not move after inserting the electrode.

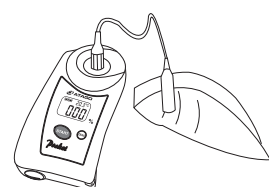
Standard solution  
(2.50g/100g salt water)  
Min. 1.5mL



Check with Standard Solution

Check the standard value on a regular basis.

## Measurement



① Insert the electrode probe into the fish (\*1).



② Press the START button.



Measured value

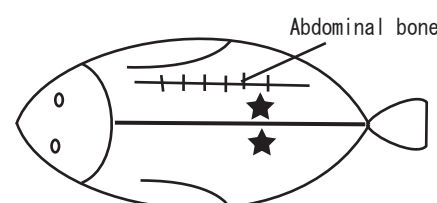
### (\*1) Measurement Position

The salt content may vary depending on the insertion position.

The ★ mark is relatively close to the salt content of the whole fish.

Please note it is not possible to measure about the skin.

<In the case of open>



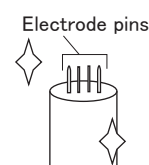
<In the case of fillet>



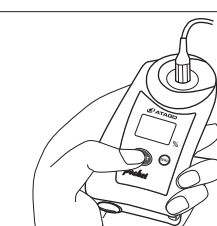
## Zero-Setting

\*Recommended on a daily basis.

### 1. Zero confirmation



① Clean the electrode pins.



② Press the START button.



Measured value:  
0.0% (\*2)

(\*2) When other than 0.0%→Zero-setting

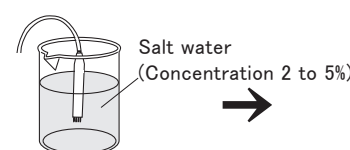


① Press the ZERO key.

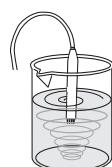


“000” will be displayed.

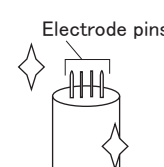
### 2. Electrode activation



① Immerse the electrode probe in saline solution.



② Stir for about 1 minute.

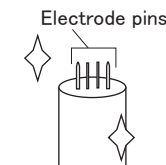


③ Clean the electrode pins and probe.

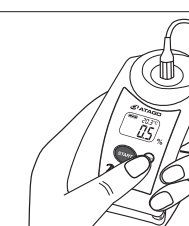
## Checking With Standard Solution

※Recommended on a regular basis.

### 1. Zero-setting



① Clean the electrode pins.



② Press the ZERO key.



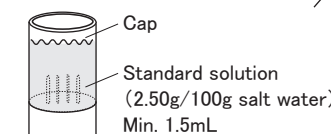
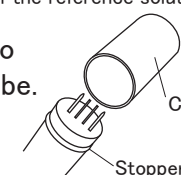
“000” will be displayed.

**[memo]** If the power is off, press the START key first to turn it on.

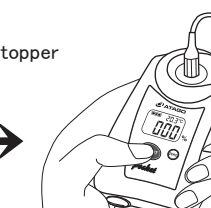
### 2. Checking with Standard Solution

**[Note]** Perform the operation within the range of the environmental temperature (room temperature) and the temperature of the reference solution in the range of 5 to 40 °C.

① Attach the cap to the electrode probe.



② Add enough standard solution so that the electrodes are sufficiently immersed.



③ Press the START button.



Measured value:  
4.4% (±0.3%) (\*3)

(\*3) When other than 4.4% (± 0.3%)→Calibration



① Press the START key and ZERO key at the same time.



“CCC” is displayed.



② Press the START key and check that it is 4.4% (±0.3%).

**[Note]** If the standard is adjusted with a solution other than the standard solution (2.50 g / 100 g saline solution), the standard will deviate and the measured value will be affected.

**[memo]** The reference solution is available from ATAGO.

RE-120250 NaCl solution 2.50% Approx. 10mL

RE-143025 NaCl solution 2.50% Approx. 100mL

RE-145025 NaCl solution 2.50% Approx. 500mL

**[memo]** The standard solution (2.50 g / 100 g saline solution) can be made in house as well. Instruction are on the next page.

## Cleaning

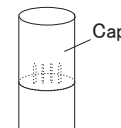
① Wash the electrodes with water.



② Wipe off the water completely with dry tissue paper.



③ Put the cap on the electrode probe.



### For oily samples:

Clean oily residues with ethyl alcohol or mild soap, and then, rinse with water.



## Error Messages



### Zero Setting Error

When the ZERO key is pressed while the electrode pins are touching something other than the air.

### Calibration Error

Calibration was attempted with something other than the calibration solution.



### Battery Error

The battery is low.

Replace both batteries with two brand new alkaline batteries.



### Out of Range Error

The sample's measured value is out of the measurement range.



### Temperature Error

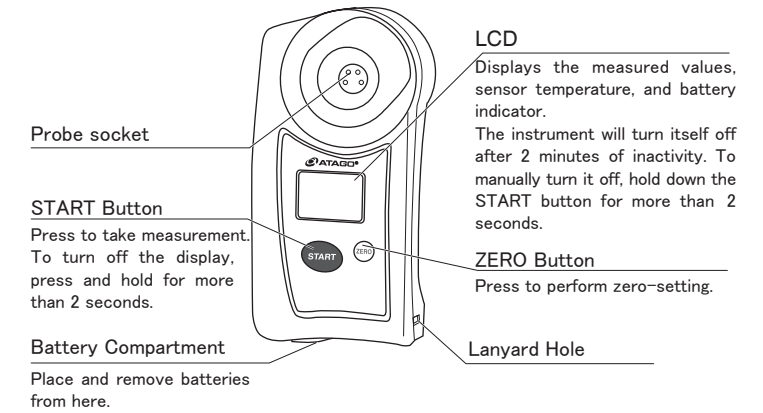
The electrode pin temperature is below the temperature range.



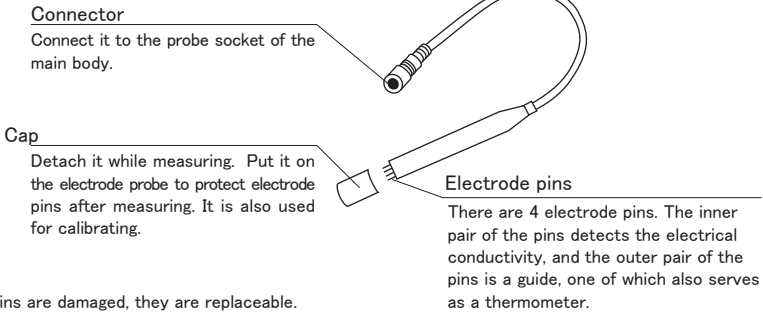
The electrode pin temperature is above the temperature range.

Parts

Main Unit



Electrode Probe



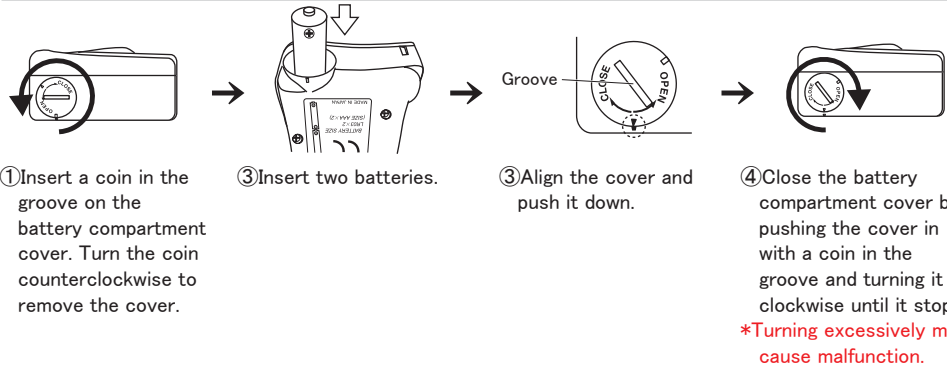
**[memo]** When electrode pins are damaged, they are replaceable.  
To purchase electrode pins, contact ATAGO.  
[Part number] RE-33095 Electrode Probe  
RE-84108 Cap

**[Note]**  
•When replacing electrode pins, zero-setting and reference value setting must be performed.

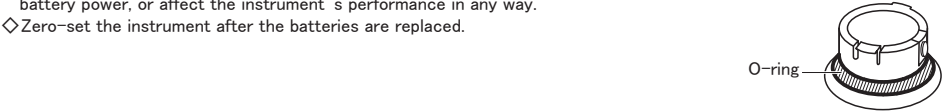
Contents

Main unit...1 Electrode probe...1 Calibration Report...1 AAA batteries...2  
ATAGO's instruments are rigorously inspected to ensure each unit meets the highest standards of quality assurance.

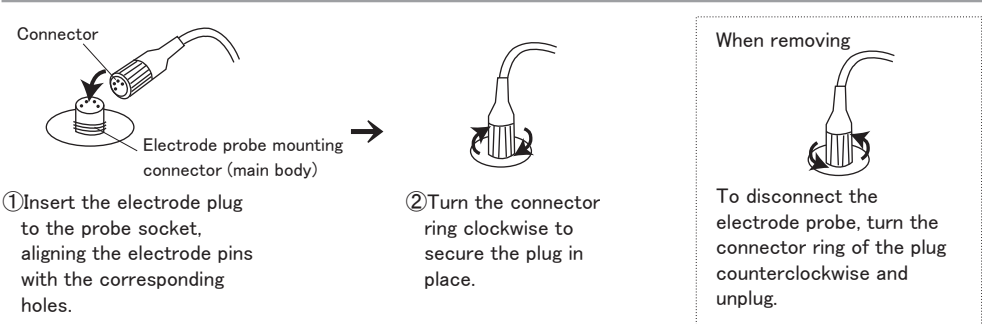
Replacing The Batteries



**[Note]**  
◇Fasten the battery compartment cover tightly to prevent water ingress or poor connection, which will cause erroneous measurements. Push the cover in firmly and turn.  
◇When the O-ring on the cover is dirty or damaged, the water resistance may be compromised.  
◇Static images may occasionally appear on LCD. Such retained pixel charges do not indicate a faulty display, consume the battery power, or affect the instrument's performance in any way.  
◇Zero-set the instrument after the batteries are replaced.



Connecting The Electrode Probe To The Main Body



Automatic Temperature Compensation

Automatic Temperature Compensation of this salt-meter is performed based on the temperature detected at the sensor section. Therefore, temperature compensation is performed exactly when the sample's temperature is equal to the temperature of the sensor (while both temperatures are from 5 to 40°C). ATC may not work correctly when the temperature of the sensor area is not the same as the actual temperature of the sample.

About Measured Values

This instrument displays fish salinity% (g / 100g) according to the electrical conductivity. The scale is created from the correlation between the electrical conductivity and the analysis method. Actually, the sample is Hiraki, etc., which is soaked in a salt water tank and soaked with salt. The analysis value and the value may differ depending on the measurement conditions.

- <Samples whose analysis values and values may differ>
- When salt water is injected by injection
  - When immersed in a seasoning liquid (a liquid containing sugar in addition to salt)
  - Thin fish meat (thickness of 7.5 mm or less)
  - Fish meat that is cracked
  - Fish that contains a lot of fat, and fish meat that contains a lot of fat (belly and around the head)

- <Measurement situation where the analysis value and the value may differ>
- Electrodes are not firmly inserted into the fish meat
  - The electrode has penetrated the fish meat

**Measurement timing**  
If you measure it after taking it out of the salt water tank (before drying), it is easy to obtain an accurate% salt content.

Offset Function

① Hold down ZERO for approx. 5 seconds while it is turned on. "b" will appear.

For addition/subtraction (b) [Range: -10.00 to +10.00]

- ② Press ZERO to select either addition (b) or subtraction (-b).
- ③ Press START to confirm.

④ Enter the addition/subtraction number. ZERO to change the number:  
0, 1, 2, ..., 8, 9, 10, 0, 1, 2...

START to confirm and move to the next decimal place. When the 1st place is confirmed with "10," the number selections for the decimal places are skipped.

- ⑤ Press START to confirm the addition/subtraction number. Next is to program a coefficient.

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

⑥ Enter the coefficient. ZERO to change the number:  
0, 1, 2, ..., 8, 9, 10, 0, 1, 2...

START to confirm and move to the next decimal place. When the 1st place is confirmed with "10," the number selections for the decimal places are skipped.

- ⑦ Press START to confirm the coefficient.

※To disable the Offset feature.  
→ Hold the ZERO button for 5 seconds while setting up the Off-Set feature.  
Factory default value (a:1.00, b:0.00).  
※The measurement range is shifted according to the offset settings.



How To Make 2.50% Standard Solution

Necessary materials

- High quality sodium chloride : 500g
- Purified water : 100g
- Beaker of 100mL (made of glass or plastics)
- Digital scale : Accuracy of ±0.01g min. capacity of 200g

Procedure

1. Place the beaker on a digital scale and zero the scale.
2. Put 2.50g of sodium chloride in the beaker.
3. Add purified 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.

**[Note]**  
\*Maintain the ambient temperature at 20°C±5°C.  
\*Purchase sodium chloride from a local reagent store.  
\*Make a total weight of no less than 100g to minimize relative error.  
\*Unit of measurement: weight/weight %

Safety Precautions

Read and follow all safety instructions before operating the instrument. Failure to comply with the following instructions may result in personal injury or property damage.

WARNING

- Ensure safety when handling hazardous materials. Observe precautionary measures and use protective equipment. Be aware of the hazards of such chemicals and emergency response guidelines.
- ATAGO may not be held liable for any injury or damage arising in connection with handling of hazardous materials during the use of the instrument.
- Do not drop the instrument or subject it to strong physical shock.
- 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.
  - 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.
  - 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.
  - Have the batteries and battery compartment cover removed during air transport.
- <International Protection Classification IP65>
- It is possible to wash with water while the main body and the electrode rod are connected, but do not immerse in water.

Storage And Maintenance

- Store the instrument in a dry place away from direct sunlight. Exposure to humidity and heat may damage the instrument.
  - Clean and dry the sample stage thoroughly, following the "Cleaning" instructions.
- Store the unit away from direct sunlight at a stable temperature with as little fluctuation as possible.

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 prism 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

Please have the serial number information ready when contacting a service center.

Specifications

Measurement range	Fish Salinity 0.0 to 10.0% (g/100g) Temperature 0.0 to 100°C	Measurement time	Approx. 1 seconds
Backlight		Backlight	The backlight stays on for 30 seconds after any button is pressed.
Resolution	Fish Salinity 0.1% (g/100g) Temperature 0.1°C	Output	NFC Forum Type 4 Tag ISO/IEC 14443 Type A
Measurement accuracy	Fish Salinity Absolute Precision ±0.1%(0.0 to 3.9%) Relative Precision ±5%(4.0 to 10.0%) Temperature ±1°C	Output category	Date Time, Salt [g/100g], Temp [degC] (e.g.) 2019/01/17 09:30:45, 2.3, 21.3
Sample temperature	5 to 40°C	International Protection class	IP65
Ambient temperature range	5 to 40°C	Dimensions and weight	55(W) × 31(D) × 109(H)mm, 100g (main unit only)

ATAGO 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 https://www.atago.net/

ATAGO U.S.A., Inc.

TEL: 1-425-637-2107 customerservice@atago-usa.com

ATAGO INDIA Instruments Pvt. Ltd.

TEL: 91-22-2833-8038 / 8076 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: 7-812-777-96-96 info@atago-russia.com

ATAGO KAZAKHSTAN Ltd.

TEL: 7-727-257-08-95 info@atago-kazakhstan.com