7314-E04

How to Get Extended Warranty 1 year → 2 years

The warranty period will be extended from 1 year to 2 years when you register customer 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

Pocket Acidity Meter (Pear)

Master Kit

ATAGO®

Instruction Manual

PAL-Easy ACID14 Cat. No. 7314

Parts

GOOD DESIGN

LCD
Displays the measured values, sensor temperature, and battery indicator.
The instrument will turn itself off after 2 minutes of inactivity.
To manually turn it off, hold down the START button for more than 2 seconds.

START Button
Press to take measurement.
To turn off the display, press and hold for more than 2 seconds.

R Button
Press to restore default settings for the Offset Feature.

Battery Compartment
Place and remove batteries from here.

Sample Stage
Place sample on the sensor located at the center of the sample stage.

ZERO Button
Press to perform zero-setting.
Press and hold to setup the offset feature.

Lanyard Hole

Contents

Main unit…1 Inspection Certificate…1 AAA batteries…2 Measuring Spoon 1mL…1 Beaker 100mL…1
Digital scale…1 (☞About the Digital Scale)

Note Please remove the tape in the battery compartment before first use.
Memo The measuring spoon is available from ATAGO.
Part No. RE-39005 Measuring Spoon 1mL

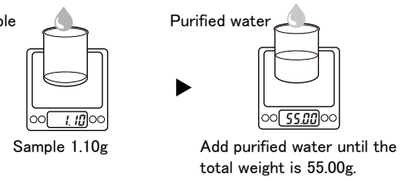
ATAGO instruments are rigorously inspected to ensure each unit meets the highest standards of quality assurance.

Instrument

The instrument measures the acidity (%) in the 1:50 dilution of a sample that is diluted with distilled, purified, or deionized water.
The measurement value is the acidity (%) of the undiluted sample (stock-solution).

Sample Preparation Tips

・Sample dilution
Any amount of sample can be made as long as the dilution ratio is 1:50. We recommend 1.00g of sample to keep accuracy consistent.
<example>



Sample 1.10g
Add purified water until the total weight is 55.00g.

Measurement Value

This unit measures and determines the acidity through electrical conductivity.
Citric acid is the primary acid found in Pear.
The instrument measures the total acidity in a sample and converts it into Citric acid concentrations.

To measure the acidity of La France and Aurora, enter the bellow values using the offset function.
・La France: 0.58 for coefficient (a) and +0.06 for addition / subtraction (b).
・Aurora: 0.54 for coefficient (a) and +0.00 for addition / subtraction (b).

Automatic Temperature Compensation

The Automatic Temperature Compensation (ATC) feature is based on temperature detected by the thermo sensor located near the sensor area.
ATC may not work correctly when the temperature of the sensor area is not the same as the actual temperature of the sample. When measuring a hot or cold sample, let it sit on the sensor for approximately 20 seconds and measure, or take multiple readings until measurements become stable.

Zero-setting and Measurement

Preparation

Note Recommended on a daily basis.

Zero-setting

1. Clean the sensor with water. Dry the area with tissues thoroughly.

2. Press the START button (with nothing on the sensor).

3.
Measurement: not 0.00
—Zero-setting is required.—
Press the ZERO button (with nothing on the sensor).

Measurement: 0.00

"000" will appear.

Flash ▶ Light up

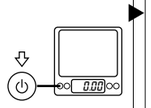
Proceed to Measurement

Measurement

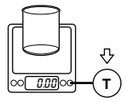
[1]Dilution ☞About the Digital Scale

Memo Necessary Materials : Digital scale, Beaker 100mL

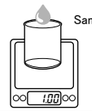
1. Press the POWER Button.



2. Place the beaker on the scale and zero set (tare). (Press the Zero-set button (tare))



3. Pour 1.00g of sample into the beaker.
Memo Any amount of sample can be made as long as the dilution ration is 1:50. We recommend 1.00g of sample to keep accuracy consistent.

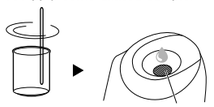


4. Add purified water until the total weight is 50.00g.

5. Gently stir.

[2]Measuring the Acidity

1. Apply some diluted sample.



2. Press the START button.

Measurement is displayed after "---."
The unit of Acid is %.

Memo The measurement is the value of the sample (stock-solution).

Cleaning
・Wipe off the sample. Clean the sensor with water.
Dry the area with tissues thoroughly.
・Clean oily residues with mild soap, and then, rinse with water.
Note Handle the sensor with care so as not to scratch it.

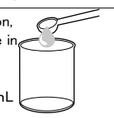
Addendum

Measuring Without using a Scale For approximate measurement only

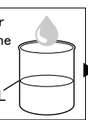
[1]Dilution

Memo Necessary Materials : Measuring spoon 1mL, Beaker 100mL

1. Using the attahced measuring spoon, place a level spoonful (1mL) of sample in the attached beaker.



2. Add purified water to the beaker until the total amout is 50mL.



3. Gently stir.

Proceed to [2]Measuring the Acidity

Checking with Reference Solution

When there is any doubt regarding accuracy of measurement results, adjust the reference value according to the following procedure.
Memo The reference solution is available from ATAGO. Part No. RE-130004 Reference solution (0.04% Citric acid solution)

Checking with Reference Solution

1. Clean the sensor with water. Dry the area with tissues thoroughly. (Press the START button to turn on the instrument.)

2. Press the ZERO button (with nothing on the sensor) to zero-set.

"000" will appear.

Flash ▶ Light up

3. Apply the reference solution.
*Reference solution (0.04% (g/100g) Citric acid solution)

4. Press the START button

5.
Measurement: not 2.16 (±0.22) Acid
Calibration is required.

Measurement: 2.16 (±0.22) Acid
The instrument is calibrated correctly.

Calibration

6. Apply the reference solution. Turn on the instrument. Press the START and ZERO buttons simultaneously.

"CCC" will appear.

Flash ▶ Light up

Acid: Offset Function

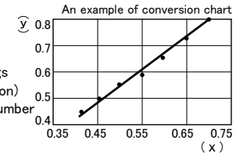
Discrepancies with titration
Due to the difference in measurement principles, readings from the instrument may not match up exactly with the readings by titration for certain samples. However, correlation between the two testing methods can be seen.

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

$y = a x + b$

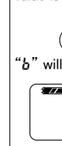
y : titration readings
x : The instrument readings
a : coefficient (multiplication)
b : addition/subtraction number

An example of conversion chart



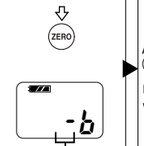
For addition/subtraction (b) [Range: −5.00 to 5.00]

1. Hold down ZERO while it is turned on. (While the measured value is displayed)



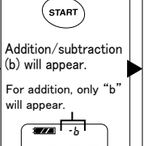
"b" will appear

2. Press ZERO to select either addition (+) or subtraction (−).



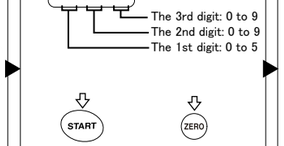
No plus sign will be displayed.

3. Press START to confirm.



Addition/subtraction (b) will appear.
For addition, only "b" will appear.

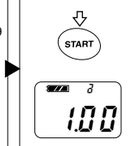
4. Enter the addition/subtraction number.



The 3rd digit: 0 to 9
The 2nd digit: 0 to 9
The 1st digit: 0 to 5

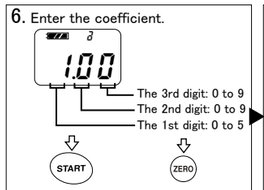
START to confirm and move to the next digit.
ZERO to change the number.

5. Press START to confirm the addition/subtraction number.



For coefficient (a) [Range: 0.50 to 5.00]

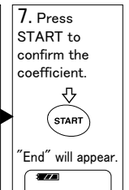
6. Enter the coefficient.



The 3rd digit: 0 to 9
The 2nd digit: 0 to 9
The 1st digit: 0 to 5

START to confirm and move to the next digit.
ZERO to change the number.

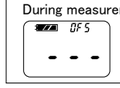
7. Press START to confirm the coefficient.



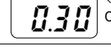
"End" will appear.

・The measurement range is shifted according to the offset settings.
・Screen images when offset is on.

During measurement

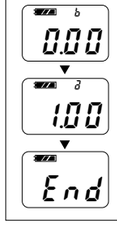


After zero-setting with air



<example>
Offset "b" = addition of 0.30

For default
Press the R button while setting up the Off-Set feature.



Factory default value
Addition/subtraction (b) 0.00
Coefficient (a) 1.00

Error Messages

The following messages alert the user when an operation has failed.

Lo ・The battery is low.

AAA Acid
・The sensor was not empty when zero-setting was attempted.
・Calibration was attempted with something other than the calibration solution.

LLL Temperature
・The sensor temperature is below the temperature range.

HHH Acid
・The sample measured outside the measurement range.
Temperature
・The sensor temperature is above the temperature range.

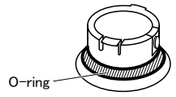
Specifications

Measurement range	Acid 0.10 to 4.00%	10.0 to 40.0℃
Resolution	Acid 0.01%	0.1℃
Measurement accuracy	Acid ±0.10% (0.10 to 1.00%) Relative precision ±10% (1.01 to 4.00%) ±1℃	
Measurement time	Approx. 2 seconds	
Backlight	The backlight stays on for 30 seconds after any button is pressed.	
Output	NFC Forum Type 4 Tag ISO/IEC 14443 Type A	
Output category	Date Time, Acidity [%], Temp [degC]	
Acidity scale	(e.g.) 2019/01/17 09:30:45, 0.24 21.3	
Automatic temperature compensation range	10 to 40℃	
Ambient temperature range	10 to 40℃	
International Protection class	IP65	
Power supply	Two (2) AAA alkaline batteries	
Dimensions and Weight	55(W)×31(D)×109(H)mm , 100g (main unit only)	

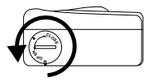
2306K Printed in Japan

Inserting Batteries

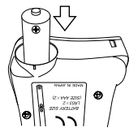
Note When the O-ring on the battery compartment cover is dirty or damaged, the water resistance may be compromised.



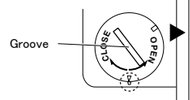
1. Insert a coin in the groove on the battery compartment cover.
Turn the coin counterclockwise to remove the cover.



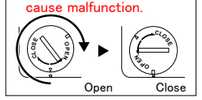
2. Insert two batteries.



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.
※Turning excessively may cause malfunction.



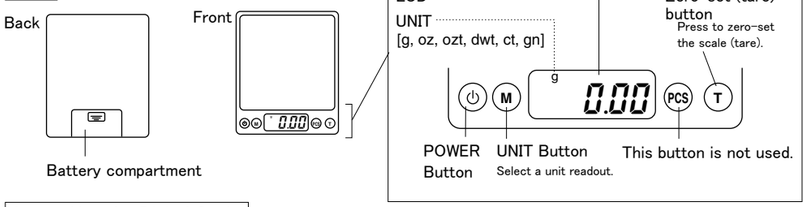
About the Digital Scale

Note Remove the tape from the battery compartment.

Contents

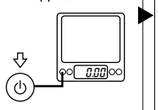
Main unit…1　Cover…2 (large and small)　AAA batteries…2

Parts

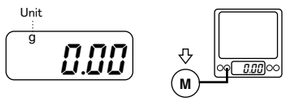


How to Use the Digital Scale

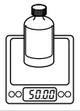
1. Press the POWER Button.
"0" will appear.



2. Check the unit readout.
Press the UNIT button and select "g."

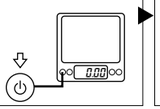


3. Place the item you wish to weigh onto the scale.
The item's weight will appear on the scale.



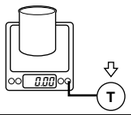
Zero-setting and Weighing

1. Press the POWER Button.
"0" will appear.



2. Place the beaker on the scale.
The beaker's weight will appear on the scale.

3. Press the Zero-set button (tare)
"0" will appear.



4. Pour the sample you wish to weigh into the beaker.
The sample's weight will appear on the scale.

Error Messages

Lo　:The battery power is low. Replace with new alkaline AAA batteries.
O-LD　:The item you are trying to weigh exceeds the permissable weight limit of the scale. Quickly remove it from the scale.

Environmental conditions

- Do not expose the scale to extreme heat or cold.
- Do not expose the scale to any type of moisture.
- Use between 10 to 30℃ only.
- Use in a dry, clean environment.
- Any contact with or exposure to dust, debris, humidity, strong vibrations, extreme atmospheric conditions or other electronics may affect the accuracy of the scale and result in unreliable readings.

Note

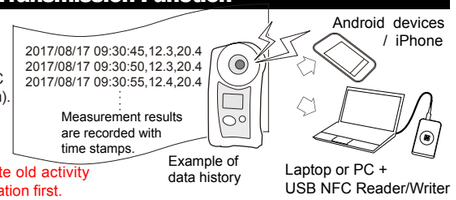
- For precise measurements, place the item you wish to weigh onto the scale gently.
- Place the scale atop a flat, stable surface.
- The digital scale is remarkably durable. However, it is a precision instrument and should be used and treated with the utmost care.
- Use of the scale for purposes other than its intended use will result in damage to its internal components.
- Do not shake or drop the scale.

Specifications

Measurement range	0.01 to 500.00g
Resolution	0.01g
Unit	g, OZ, ozt, dwt, t, gn
LCD	LCD display with backlight
Auto-Off Feature	The scale will automatically turn off after 90 seconds of inactivity.
Power supply	Two (2) AAA alkaline batteries (Do not use rechargable batteries.)
Temperature Conditions	Ambient temperature: 10 to 30℃

About Data Transmission Function

This instrument is equipped with NFC（Near Field Communication）technology.
Data history can be accessed by bringing PAL-NFC to any Android devices, iPhone or PC-linked USB NFC Reader/Writer* (in conformance to PC/SC specification).
* Operation tested with SONY USB NFC Reader PaSoRi RC-S380.



Caution Data history exceeding 100 will overwrite old activity with new data, replacing the oldest recorded information first.

Preparation

(1) Software installation

Install a software to readout the NFC tag ahead of time.

Android devices / iPhone

Applicable Application Software (app) "NFC Reader"
* If an NFC tag reader app is already installed on the Android devices or iPhone, this app can be used.

Laptop or PC + USB NFC Reader/Writer

Data history can be exported to Microsoft(R) Excel(R)(for Windows(R)) using a PAL NFC software "ATAGO Logger (NFC)."

2017/08/17 09:30:45	0.00	20.5
2017/08/17 09:31:50	0.21	20.4
2017/08/17 09:32:12	0.30	20.4
2017/08/17 09:34:26	0.30	20.4
2017/08/17 09:43:07	AAA	20.4
2017/08/17 09:43:18	OOO	20.3
2017/08/17 09:45:39	HHH	20.3
2017/08/17 09:46:07	0.28	LLL

Example of data history read out
LLL : Lower limit error.
HHH : Upper limit error.
AAA : Zero setting error.
OOO : Zero setting complete.
CCC : Calibration Complete.

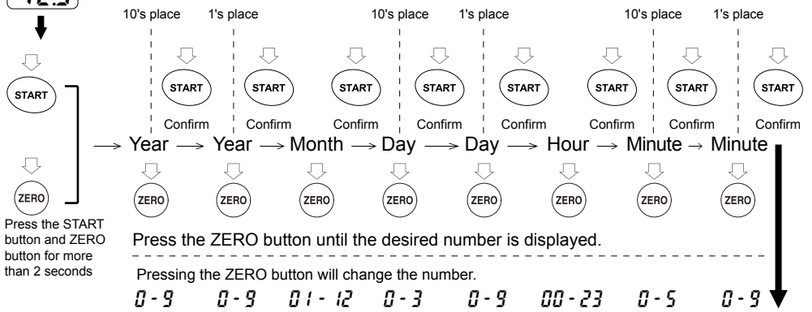
A0135897
667937E581
Back side of the body
Instrument's serial number
UniqueID = Last 10 digits of NFC chip number (NFC'S serial number)
You can use the NFC'S serial number to identify which instrument the readings correspond to.
You can check the NFC chip number (serial number) by using an app that can read the serial number.
Note: Not all NFC apps capture the NFC'S serial number
Suggested app: "NFC Tools"

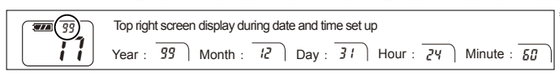
(2) Date and time setting

Set the date and time (year [the last two digits of the western calendar], month, date, time and minute) prior to data history readout.

While powered on…
(Example image)

memo Reset the date and time when batteries are removed for 24hours or more.



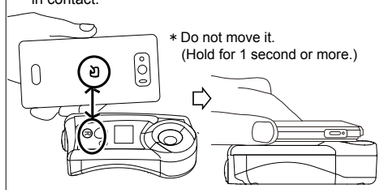


* For "time", set the time in 24 hour notation
(Seconds : Fixed 00)

Data history readout

Android devices / iPhone

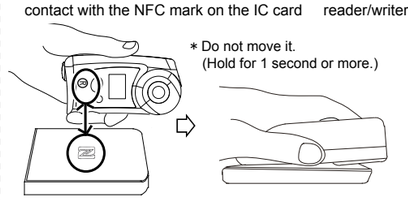
1. Launch NFC Reader (or other NFC tag reading app).
2. Position NFC on Android device or iPhone to the "R button" at the bottom portion of the PAL then bring in contact.



* NFC position on Android device or iPhone differs to the model.

Laptop or PC + USB NFC Reader/Writer

1. Launch ATAGO Logger.
2. Bring the bottom part (where the "R button" is) of PAL in contact with the NFC mark on the IC card reader/writer.



* Be sure to establish the PC and IC card reader/writer connection in advance by setting up (and installing the driver) IC card reader/writer.
* Data history can be read out by holding up the USB NFC Reader/writer to the PAL unit.

All recorded data stored in this instrument are read out.

* If data history is not read out, bring both in contact and move the one that is over the other device in a forward and back or left and right in a small motion.

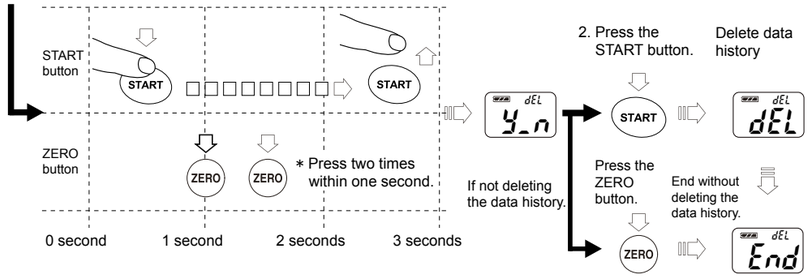
Caution Bring PAL and Android devices, PAL and iPhone or PAL and USB NFC Reader/writer as close to each other as possible. (Position it so that the distance between both devices are 5mm or less.)
memo Data history can be read out while PAL is powered off.
memo Data history readout will not delete the stored data history.

Delete data history

All data history will be deleted from this instrument.
Caution Deleted data history can not be restored.
memo A data history can not be selected.

While powered on…
(Example image)

1. Quickly (3 seconds or less) do the following button operation.
(a) While pressing the START button, press the ZERO button two times.
(b) Quickly release the START button.



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 water at a temperature not exceeding 50℃.
- 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.

- Cleaning　Clean and dry the sensor area thoroughly after use, leaving no sample residues or water.
〈For oily samples:〉
Remove oily residues with 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.

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
- Leakage from batteries other than those included with the unit
- Having been misused and/or operated outside the environmental specifications

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.

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