

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

Digital hand-held "Pocket" pH Meter PAL-pH Plus

Cat.No. 4301

ATAGO®
Instruction Manual

Parts



LCD

Measurement results and remaining battery charge are displayed.

START button (Power button)

Press to take measurements and hold down to turn off the display.

Battery compartment

Place and remove batteries from here.



Sample stage

Apply samples on the electrode in the center of the sample stage.

Glass electrode

Reference electrode

CAL button

Press to perform calibration.

START button & CAL button

Press to set date, time, and delete data history.

Lanyard hole

Contents

Main unit with Silicone Cover...1 Calibration Report...1 AAA batteries...2
pH Meter Solution pH4.01 10mL pH Meter Solution pH6.86 10mL pH Meter Solution pH9.18 10mL

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

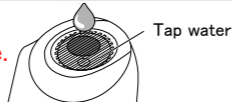
Introduction

Thank you for purchasing the instrument. Carefully read and follow all instructions. Keep this manual for future reference. A small amount of solution may leak from the reference electrode. In addition, air bubbles may be present inside the electrodes due to manufacturing processes. These are normal and do not affect the unit's performance.

Important:

Please Read and Follow Instructions Carefully Before Initial Use.

Place plenty of tap water and leave more than 30 minutes.



● Safety Instructions

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

- ◇ Carefully read this manual to have basic knowledge of the function of each component.
- ◇ ATAGO is not liable for any loss and damage caused by the measurement and use of this instrument.
- ◇ ATAGO shall not be held responsible for any or all damages that may result from using the instrument for those other than its intended purpose (measurement of pH level of a liquid sample).
- ◇ If the pH meter solution for calibration comes in contact with hands or skin, immediately rinse with plenty of water.
- ◇ **The glass electrode is fragile; be careful not to damage it. Glass shards may cause injury.**
- ◇ Do not use metal tools, such as a spoon, as they may scratch the glass electrode, resulting in erroneous measurements.
- ◇ Do not measure organic solvents, oils, adhesives, cement, alcohol, surfactants, polymer solvents or hydrogen fluoride.
- ◇ Do not use water above 50°C to rinse the instrument.
- ◇ Only use the specified battery type. Observe proper polarities, properly aligning the anodes and cathodes.
- ◇ Store the instrument away from direct sunlight/heat sources and excessive amounts of dust/debris.
- ◇ Do not expose the instrument to a rapid change in ambient temperature.
- ◇ Do not subject the instrument to strong vibration.
- ◇ Do not subject the instrument to extreme cold temperature.
- ◇ Do not place the instrument under anything heavy.
- ◇ Loosen the battery compartment cover for air transportation.

(International Protection Classification IP65)

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

(Chemical Resistance of Body Case)

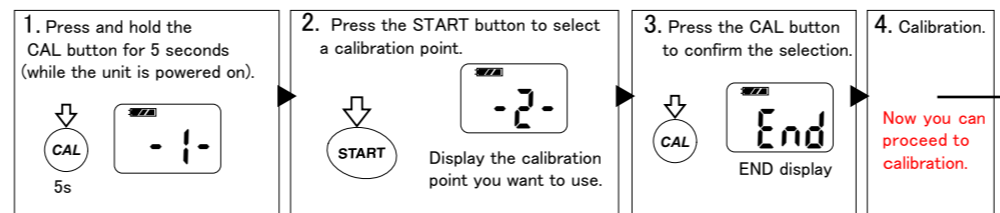
◇ The body case is made of PC resin. Do not expose it to water vapor or solvents.

How to Select a Calibration Option

Calibration point can be changed according to the type of pH Meter Solutions that are pH standard solutions sold by ATAGO. The factory default setting is "1-". Change the calibration point to "2-" only if you wish to calibrate with pH Meter Solutions of pH 4.01, pH 7.00, or pH 10.01. Do not need the operation if the calibration point is not changed.

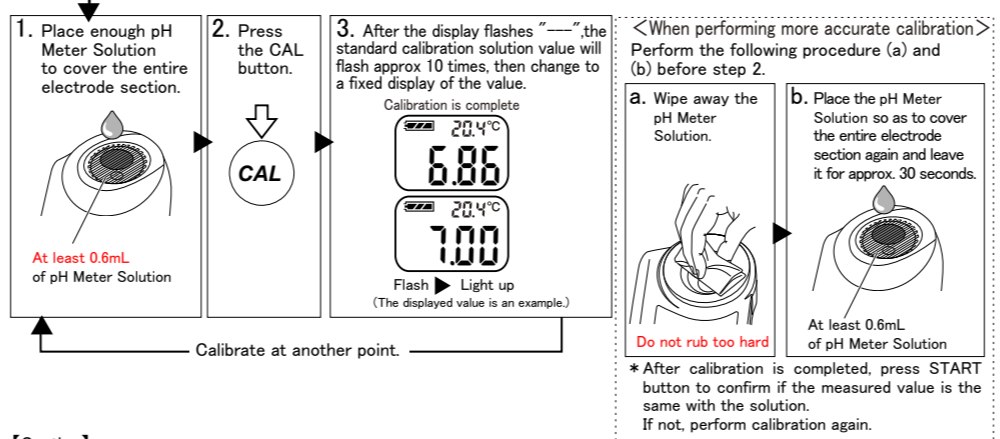
Calibration point 1- Calibration can be done at 3 points of pH 4.01, pH 6.86, and pH 9.18. If the sample is above pH 6.86, calibration can be done at 2 points of pH 6.86 and pH 9.18. If the sample is less than pH 6.86, calibration can be done at 2 points of pH 4.01 and pH 6.86.

Calibration point 2- Calibration can be done at 3 points of pH 4.01, pH 7.00, and pH 10.01. If the sample is above pH 6.86, calibration can be done at 2 points of pH 7.00 and pH 10.01. If the sample is less than pH 6.86, calibration can be done at 2 points of pH 4.01 and pH 7.00.



Calibration

The instrument automatically detects and calibrates according to the pH of the pH Meter Solution that are pH standard solutions sold by ATAGO.



[Caution]

- ◇ Perform calibration before initial use and at least once a month to maintain precision and accuracy.
- ◇ Measure a pH Meter Solution. When the measurement value falls outside of the expected range, perform calibration.
- ◇ When the time lapsed since last measurement is more than 2 weeks, it is recommended to calibrate the instrument.
- ◇ If the ambient temperature changes during the daily work with this instrument, it needs the calibration again.

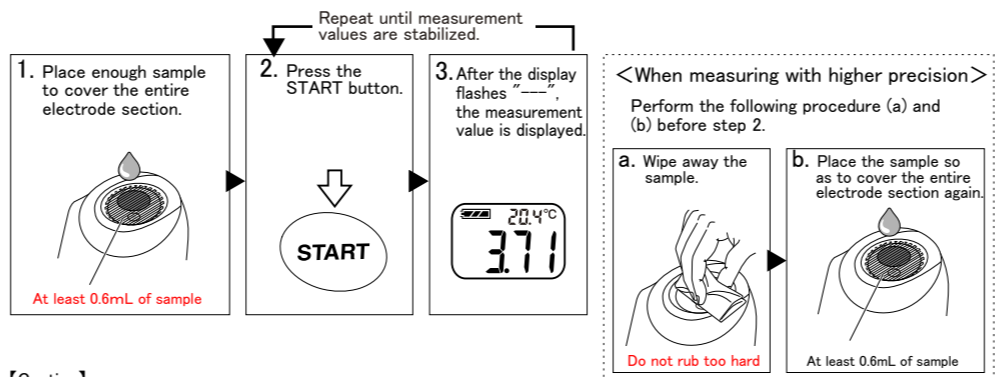
Additional refills of pH Meter Solutions can be purchased from ATAGO (sold separately).

Contact ATAGO for recommended pH Meter Solutions.

[Part No.]	pH Meter Solution	[Part No.]	pH Meter Solution	[Part No.]	pH Meter Solution Set
RE-99210	pH4.01 500mL	RE-99221	pH4.01 100mL	RE-99230	pH Meter Solution Set pH4.01/pH6.86/pH9.18 10mL
RE-99211	pH6.86 500mL	RE-99222	pH6.86 100mL	RE-99231	pH Meter Solution Set pH4.01/pH7.00/pH10.01 10mL
RE-99212	pH7.00 500mL	RE-99224	pH9.18 100mL		
RE-99213	pH9.18 500mL	RE-99223	pH7.00 100mL		
RE-99214	pH10.01 500mL	RE-99225	pH10.01 100mL		

Measurement

* If the power is not turned on, press the START button to turn on the power, then perform the following procedure.



[Caution]

- ◇ Do not splash water above 50°C. The plastic may warp, which may compromise the water resistance.
- ◇ When measuring hot samples, place only the necessary amount and do not let it overflow from the sample stage well.
- ◇ When hot water is necessary to clean off hardened samples, use water-soaked gauze around the sample stage and keep hot water away from the body case.
- ◇ In rare cases, a measurement value may be displayed even if there is not sample placed on the electrode section. In such instances, simply place some sample on the electrode section and press the START button. Measurements will be taken normally.
- ◇ **When measuring samples such as strong acids and high alkaline, take a quick measurement and rinse off any remaining sample with tap water.**

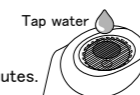
<LCD Auto Shut-off>

The instrument will turn itself off after 5 minutes of inactivity. To manually turn it off, hold down the START button for more than 2 seconds.

Calibration and Measurement Guidelines

◇ When the measured values are off...

(Coping Method 1)
Place plenty of tap water and leave more than 30 minutes.

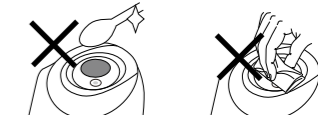


(Coping Method 2)
Place enough sample to cover the entire electrode section.



The insufficient amount of sample will result in abnormal measurement or calibration.

◇ Do not damage the electrodes!



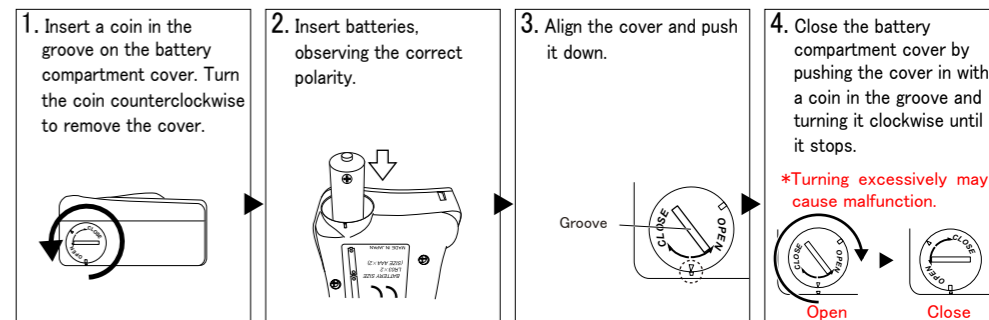
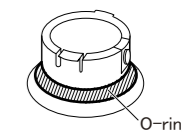
Do not use metal tools. Be careful not to scratch the electrodes.

◇ Initial measurements may fluctuate with hot or cold samples. Wait for the instrument to acclimate to the sample temperature, then press the START button. Alternatively, press the START button multiple times until measurements become stable.

Replacing the Batteries

[Caution]

- ◇ Please remove the tape in the battery compartment before first use.
- ◇ 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.
- ◇ When the battery icon indicates the low power level (), replace both batteries with a brand new set of AAA alkaline batteries (1.5V).
- ◇ 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.
- ◇ Check the expiration dates on batteries before purchase.
- ◇ Calibrate the instrument after the batteries are replaced.

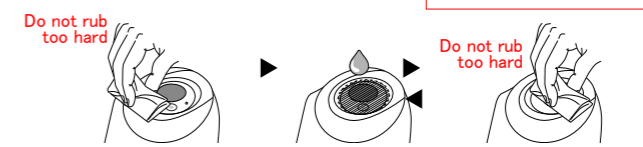


Cleaning

Note Do not scratch the electrode.

For samples containing oils or fats:

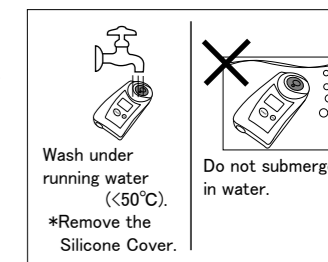
Clean oily residues on the electrode section with ethyl alcohol. Then rinse the electrode section with tap water thoroughly.



1. Wipe off the sample. (Remove the sample with a plastic pipette.)

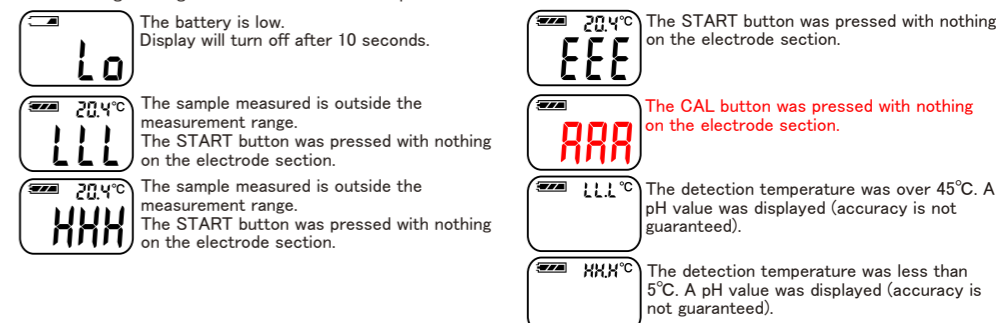


1. Wipe off the sample. (Remove the sample with a plastic pipette.)



Error Messages

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



About Data Transmission Function

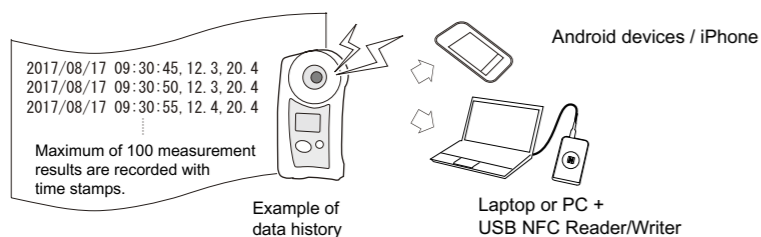
This instrument stores maximum number of 100 measurement data. This instrument is equipped with NFC (Near Field Communication) technology.

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.

2019/01/17 09:30:45	LLL	20.4
2019/01/17 09:31:50	8.31	20.5
2019/01/17 09:32:12	8.25	21.0
2019/01/17 09:34:26	AAA	21.2
2019/01/17 09:43:07	c6.86	22.3
2019/01/17 09:43:18	c4.01	22.5
2019/01/17 09:45:39	5.89	25.1
2019/01/17 09:46:07	5.92	HHH

Example of data history read out

Laptop or PC + USB NFC Reader/Writer

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

LLL : Lower limit error.
HHH : Upper limit error.
AAA : Calibration error.
EEE : Error.
c6.86 : pH 6.86 Calibration completes
c4.01 : pH 4.01 Calibration completes
c9.18 : pH 9.18 Calibration completes
c7.00 : pH 7.00 Calibration completes
c10.01: pH 10.01 Calibration completes

S/No.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.

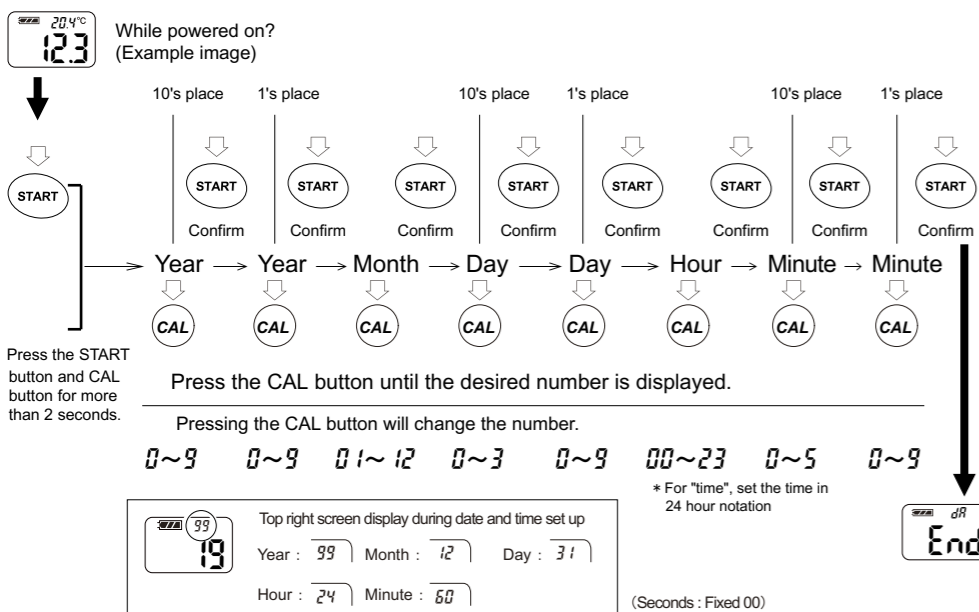
Note: Not all NFC apps capture the NFC'S serial number

Suggested app: ?NFC Tools?

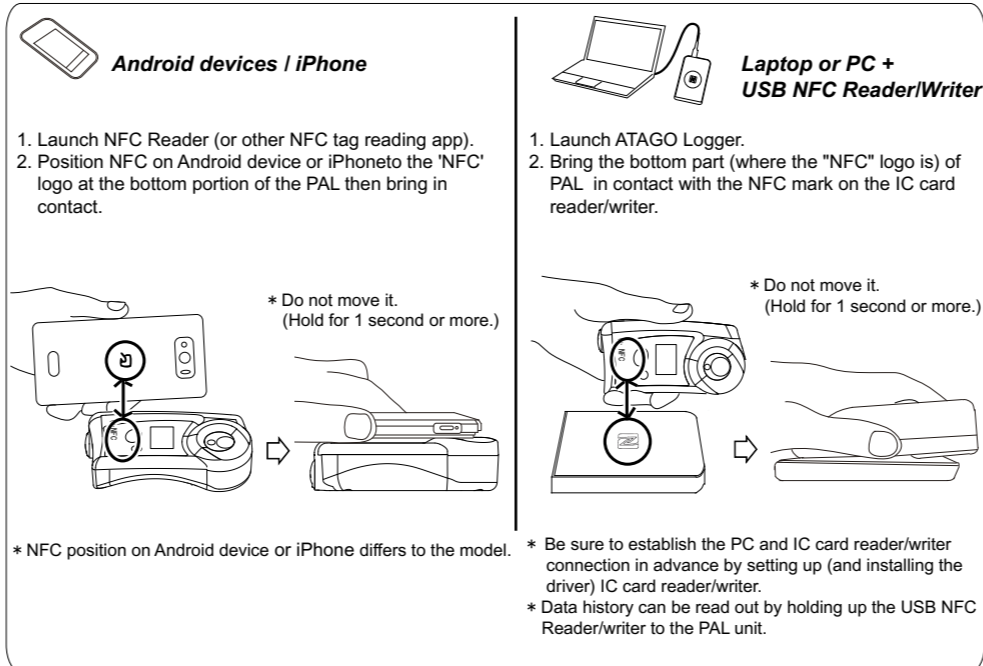
(2) Date and time setting

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

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



Data history readout



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.

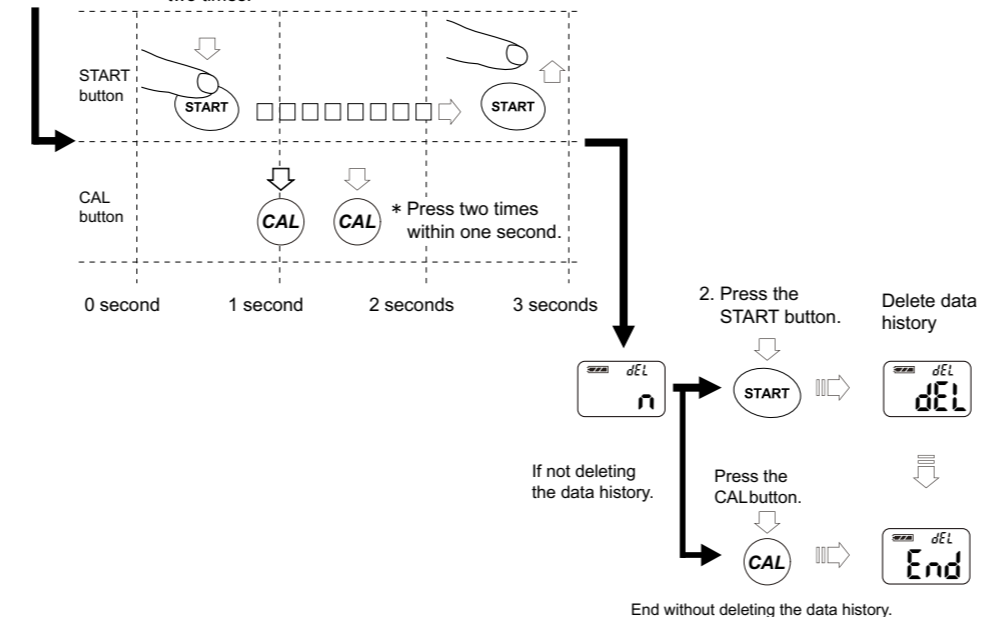
【Caution】 Deleted data history can not be restored.

【memo】 A data history can not be selected.

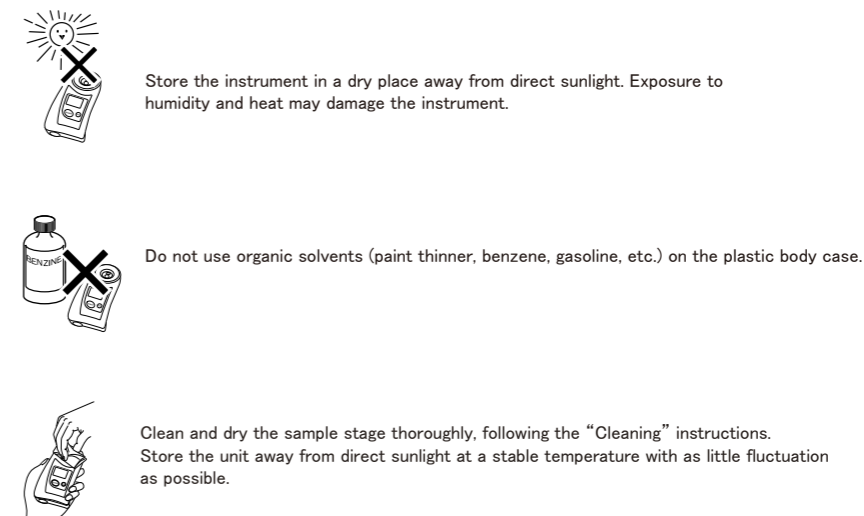
While powered on?
(Example image)

1. Quickly (3 seconds or less) do the following button operation.

(a) While pressing the START button, press the CAL button two times.
(b) Quickly release the START button.



Storage and Maintenance



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 electrode section
- 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	pH0.00 to 14.00	Temperature 10 to 40 °C
Resolution	pH0.01	Temperature 0.1 °C
Accuracy	pH±0.10	Temperature ±1 °C
Automatic temperature compensation range	10 to 40°C	
Ambient temperature range	10 to 40°C	
Sample volume	At least 0.6mL	
Calibration	Calibrate at 3 points (6.86, 4.01, 9.18) (7.00, 4.01, 10.01)	
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, pH, Temp [degC] (e.g.) 2019/01/17 09:30:45, 3.71, 21.3	
Measurement time	Approx. 3 seconds	
Power supply	Size AAA alkaline battery × 2	
International Protection class	IP65 Water resistant	
Dimensions and weight	55(W) × 31(D) × 109(H)mm, 100g (main unit only)	

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