AKSO

qualidade que se mede
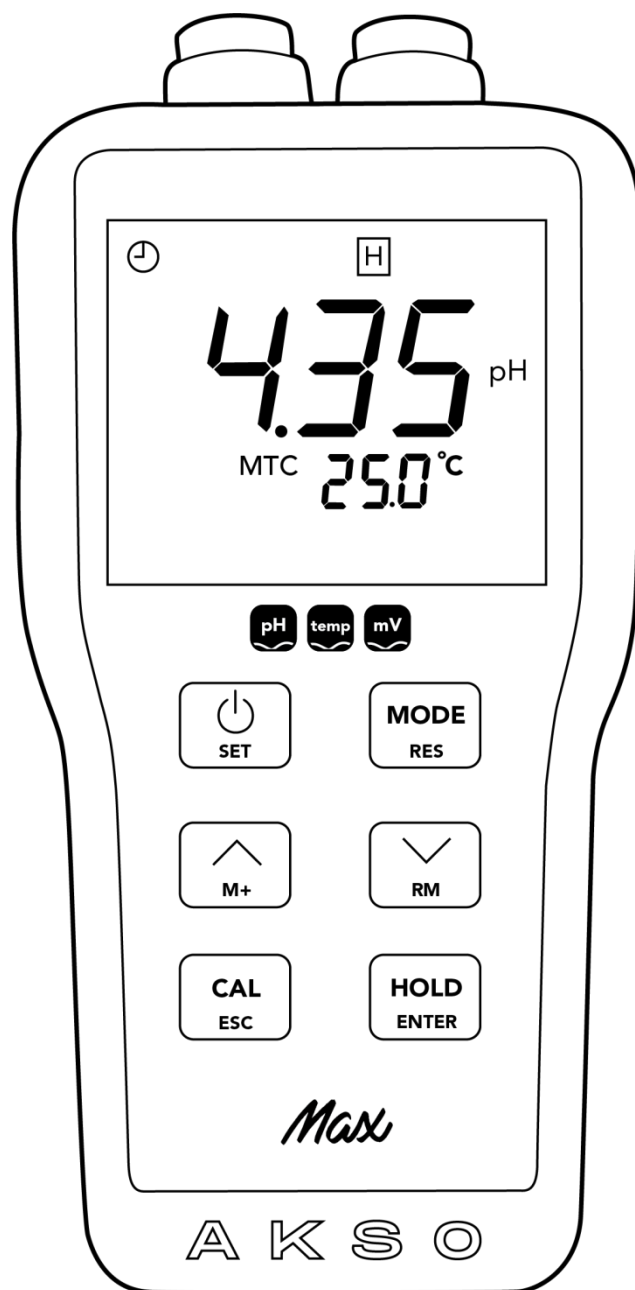
INSTRUCTION MANUAL

pH Max

PORTABLE PH METER

CONTENTS

1 - SPECIFICATIONS

pH	**Measurement range:**	- 2.00 to 16.00 pH
	Resolution:	0.01 pH
	Accuracy:	± 0.02 pH
ORP	**Measurement range:**	-1999 to 1999 mV
	Resolution:	1mV
	Accuracy:	± 3 mV
Temperature	**Measurement range:**	0 to 80 °C
	Resolution:	0.1°C
	Accuracy:	± 0.5°C
Calibration (pH)	**USA Standards:**	4.01, 7.00 and 10.01 pH
	NIST Standards:	4.00, 6.86 and 9.18 pH
Temperature compensation	**Automatic:**	0 to 80 °C
	Manual:	0 to 80 °C
Memory:		100 records
Display Lighting (Backlight):		On/Off
Automatic shutdown:		15 minutes
Reading freeze (HOLD):		Manual
Operating temperature:		0 to 50 °C
Operating humidity:		10 to 90 %UR (non-condensing)
Level of protection:		IP65
Power:		9Vdc (1 battery 9V)
Low battery indicator:		Visual
Dimensions (WxHxD):		83 x 175 x 34 mm
Weight:		250g

2 - ACCESSORIES

pH Max

Items included with the instrument:
- 1 pH electrode with temperature sensor
- 1 Storage and transport case
- 1 Instruction manual
- 1 sample of pH 4 solution
- 1 sample of pH 7 solution
- 1 sample of pH 10 solution
- 1 sample of KCl solution

Items sold separately:
- ORP electrode BNC connector PO50 – AK1010
- Rubber protective cover – AK1060
- Power supply 220VAC/12VDC – AK1075

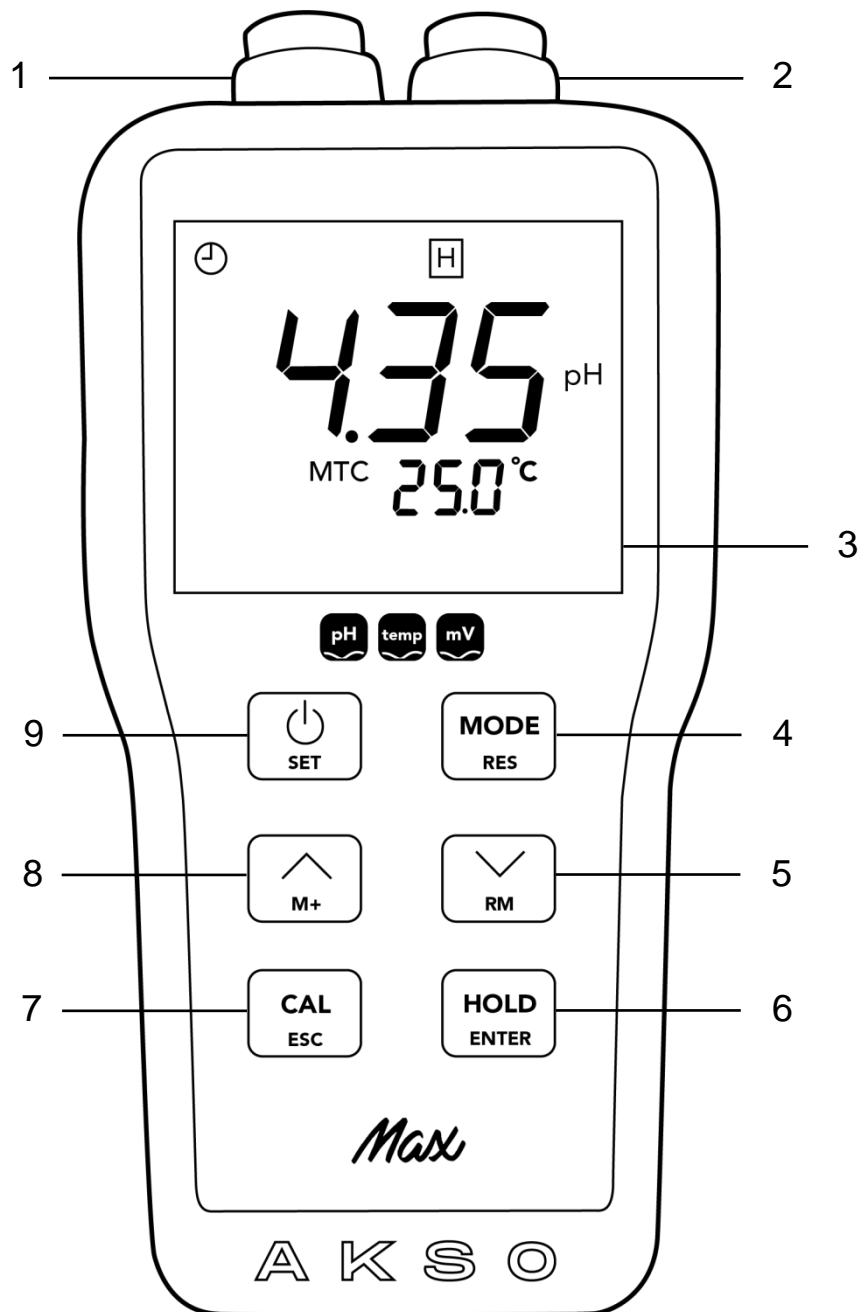| **pH Max Lab – AK110**	**pH Max Food – AK111**	**pH Max Meat – AK112**
AK1001	AK1002	AK1003

Before use, examine the instrument and accompanying items carefully. If you detect any abnormalities, contact AKSO.
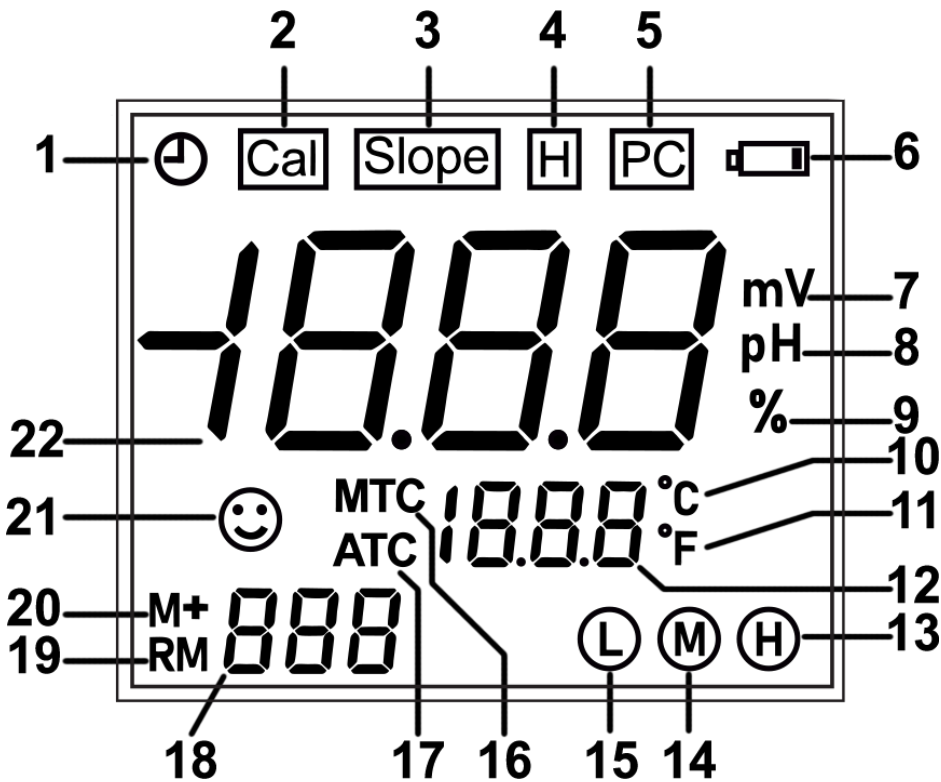
FRONT VIEW

pH Max:

1 – RCA connector (temperature)

2 – BNC connector (pH)

3 – Display

4 – Mode/Res button

5 – Down/RM button

6 – Hold/Enter button

7 – Cal/Esc button

8 – Up/M+ button

9 – On/Off/Set button

3 - OVERVIEW

DISPLAY LCD

pH Max:

1 - Active automatic shutdown
2 - Active adjustment/calibration mode
3 - Slope display indication
4 - Active reading freeze enabled
5 - Inactive
6 - Battery replacement required
7 - ORP measurement unit
8 - PH measurement unit
9 - Slope calculation unit
10 - Temperature measurement unit in °C
11 - Temperature measurement unit in °F
12 - Temperature measurement value
13 - Calibrated alcaline adjustment point
14 - Calibrated neutral adjustment point
15 - Calibrated acid adjustment point
16 - Manual temperature compensation
17 - Automatic temperature compensation
18 - Settings menu description
19 - Records visualization
20 - New record creation notification
21 - Measurement stabilization notification
22 - PH/ORP measurement value

4 – INSTRUCTIONS OF USE

POWER ON – POWER OFF

- To turn the instrument on or off, press the button [⏻ SET] ;

Adjustment - pH

Adjust the instrument's pH measurement upon receiving it and at least once a week. For greater precision, always do this before using the instrument. The instrument can be adjusted to 1, 2 or 3 pH points, respecting the following sequence combinations:

pH7 | pH7 → pH4 | pH7 → pH10 | pH7 → pH4 → pH10

1) Connect the pH electrode and temperature sensor/probe to the instrument;

2) Remove the KCl bottle from the electrode tip, turning it counterclockwise;

3) Turn on the instrument by pressing the button [⏻ SET] ;

4) Ensure that the measurement selected on the display is pH by viewing the pH unit icon;

5) Press the button [CAL ESC] to access the pH measurement adjustment mode;

6) The display will show an indicator [Cal] at the top of the screen, signaling that the meter is in calibration mode;

7) Rinse the electrode (and temperature probe) in distilled/deionized water and remove excess water using a soft paper towel;

8) Using a separate bottle, take a sufficient portion of the pH solutions, enough to cover the electrode tip. **NEVER** insert the electrode into the original vials of 250mL.

9) Immerse the electrode (and temperature probe) in the pH buffer solution, agitating it gently to homogenize it;

10) Wait for the reading to stabilize. The notification ☺ will appear on the screen;

11) After the reading stabilizes, press the button [HOLD ENTER] to save the adjustment;
   - To calibrate another pH point, repeat steps 7 to 10 using the corresponding buffer solution;
   - To exit adjustment mode, press the button [CAL ESC] . The instrument will return to measurement mode.

12) After completing the adjustment, the instrument will display the adjusted points at the bottom of the display;

13) After finishing using, rinse the electrode (and temperature probe) with distilled/deionized water and store the electrode in the storage bottle with potassium chloride solution (KCl – 3M).

NOTE:

- *Always begin the adjustment at the pH 7.00 point and, after completing the procedure, discard the used portions of the solutions;*
- *When saving the adjustment at point pH 4.01 or pH 10.01, the display will show the electrode slope percentage. The indicator **Slope** will appear;*
- *The slope indicates the electrode's performance and should be between 80% and 115%. If the slope is below 80% or above 115% clean the electrode, refer to **7 - MAINTENANCE>ELECTRODE CLEANING – pH/ORP**.*
- *If the message **Err** appears on the display when trying to save an adjustment, check the pH solutions and the electrode and repeat the procedure;*
- *When adjusting the 3 pH points, the instrument will automatically return to measurement mode.*

Measurement - pH

1) Connect the pH electrode and temperature sensor/probe to the instrument;

2) Remove the KCl bottle from the electrode tip, turning it counterclockwise;

3) Turn on the instrument by pressing the button [⏻ SET];

4) Select pH measurement by pressing the button [MODE RES]. The display will show **pH**;

5) Rinse the electrode (and temperature probe) with distilled/deionized water and remove excess water using a soft paper towel;

6) Immerse the electrode (and temperature probe) in the sample to be analyzed;

7) Wait for the reading to stabilize. The display will show ☺;

8) After the reading stabilizes, check the pH and temperature values;

9) After completing the measurements, rinse the electrode (and temperature probe) with distilled water and store the electrode in the storage bottle with potassium chloride solution (KCl – 3M).

NOTE:

- *If a temperature sensor/probe for automatic temperature compensation (ATC) is not connected, the instrument will perform manual temperature compensation (MTC), which can be modified using the button [∧ M+] and [∨ RM].*

4 – INSTRUCTIONS OF USE

Adjustment - ORP

The ORP electrode does not require adjustment. However, you can check the electrode's performance and the accuracy of the readings using an ORP standard solution.

Measurement - ORP

1) Connect the ORP electrode to the instrument;

2) Remove the KCl bottle from the electrode tip;

3) Turn on the instrument by pressing the button ⏻ SET ;

4) Select the ORP measurement mode by pressing the button MODE RES . The display will show the **mV** indicator;

5) Rinse the electrode with distilled/deionized water and remove excess water using a soft paper towel;

6) Immerse the electrode in the sample to be analyzed;

7) Wait for the reading to stabilize. The display will show ☺;

8) After the reading stabilizes, check the ORP value;

9) After completing the measurements, rinse the electrode with distilled water and store the electrode in the storage bottle with potassium chloride solution (KCl – 3M).

5 – ADDITIONAL FUNCTIONS

RECORDING MEASUREMENTS
Saving Records to Memory
To save measurement records (pH, ORP and temperature) to the instrument's memory:

1) After the reading has stabilizes, keep pressing the button ⌃(M+) until the display shows **M+** followed by the record number.

   NOTE:

   • *When the memory capacity is exceeded, the instrument will display the message **FULL** indicating that all 100 records have been used.*

Viewing Records in Memory
To view saved measurement records (pH, ORP and temperature) in the instrument's memory:

1) In measurement mode, press and hold ⌄(RM) until the display shows "RM" followed by the number of the last record.

2) To navigate between records in memory use the buttons ⌃(M+) e ⌄(RM);

3) To switch between pH and mV values of the same record, briefly press the button MODE(RES)

4) To return to measurement mode, press the button CAL(ESC) .

Delete all records in memory
To delete all records stored in the instrument's memory:

1) In measurement mode, press and hold the button ⏻(SET) to enter the setup mode. The display will show the indication P01;

2) Using the buttons ⌃(M+) and ⌄(RM) , navigate to the parameter **P06 CLr** and briefly press the button HOLD(ENTER) to access it;

3) The message **YES** will be displayed; press the button HOLD(ENTER) to confirm. All records will be erased and the instrument will return to the measurement screen;

DISPLAY LIGHTING
To activate/deactivate the display lighting:

1) In measurement mode, press and hold the button ⏻(SET) to enter the setup mode. The display will show the indication P01;

2) Using the buttons ⌃(M+) and ⌄(RM) navigate to the parameter **P05 bL** and briefly press the button HOLD(ENTER) to access it;

5 – ADDITIONAL FUNCTIONS

3) Using the buttons [∧ M+] and [∨ RM] select the option **On** to activate or **OFF** to deactivate. Press the button [HOLD ENTER] to confirm.

4) Press the button [CAL ESC] to return to measurement mode.

AUTO POWER OFF

When enabled, the meter will automatically turn off after 15 minutes of inactivity. To enable or disable the auto power off:

1) In measurement mode, press and hold the button [⏻ SET] to enter the setup mode. The display will show the indication P01;

2) Using the buttons [∧ M+] and [∨ RM] navigate to the parameter **P07 APO** and briefly press the button [HOLD ENTER] to access it;

3) Using the buttons [∧ M+] and [∨ RM] select the option **On** to activate or **OFF** to deactivate. Press the button [HOLD ENTER] to confirm.

4) The product will return to the setup mode. Verify that the option saved in memory is the desired one.

5) Press the button [CAL ESC] to return to measurement mode.

6 - SETTINGS

SETUP MODE

- To access the instrument's configurable parameter menu, in measurement mode, press and hold the button ⏻ SET . The display will show the indication P01;
- To navigate between parameters, use the buttons ∧ M+ e ∨ RM ;
- To access a parameter, press the button HOLD ENTER ;
- To toggle between the parameter configuration options use the buttons ∧ M+ and ∨ RM ;
- To confirm a setting, press the button HOLD ENTER .The instrument will return to the parameter selection;
- To go back to a previous level, press the button CAL ESC .

The figure below shows how the parameters are displayed:

1- Selected Parameter

2- Option Stored in Memory

3- Abbreviation of the Selected Parameter
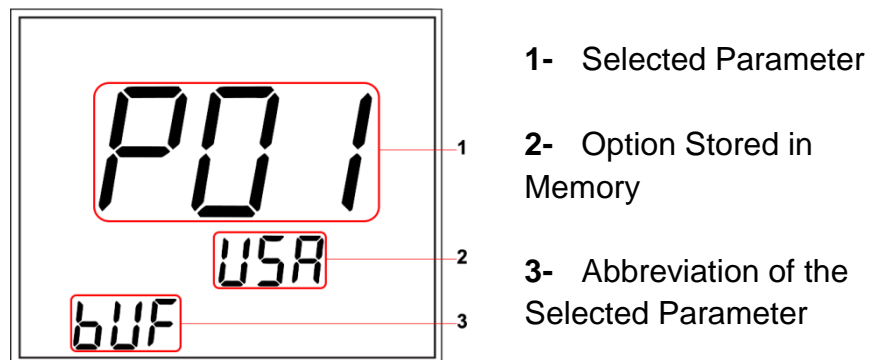
Available Parameters for Configuration:

P01 buF – Select pH calibration standard
→ **USA** (4.01, 7.00 and 10.01 pH)
→ **NST** (4.01, 6.86 and 9.18 pH)

P02 SLP – View the slope values from the last calibration

P03 AdJ – Set the offset adjustment for temperature measurement
→ **± 5.0°C** (from the measured value)

> *NOTA:*
> - *Ensure that the temperature sensor/probe is connected to perform the temperature offset adjustment.*

P04 Und – Select the temperature measurement unit
→ **°C** (Celsius)
→ **°F** (Fahrenheit)

6 - SETTINGS

P05 bL – Enable/disable backlight
→ **On** (enable)
→ **OFF** (disable)

P06 CLr – Clear all records in the instrument's memory
→ **YES** (clear all records)

P07 APO – Enable/disable auto power off
→ **On** (enable)
→ **OFF** (disable)

P08 rSt – Restore factory settings
→ **YES** (perform the reset)

The figure below shows how the options for the accessed parameter are displayed:
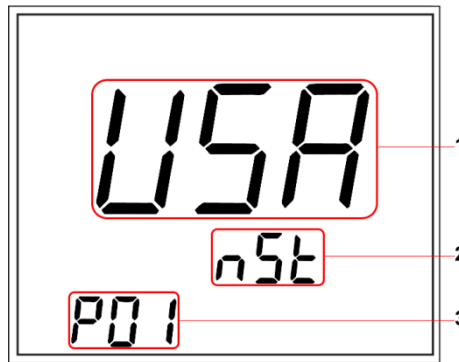
1- Defined Option

2- Another Available Option

3- Accessed Parameter

Factory Settings of the Instrument

P01 buF	- pH Calibration Standard	USA
P02 SLP	- View Slope Values	***
P03 AdJ	- Set Temperature Offset Adjustment	0.0
P04 Und	- Select Temperature Unit	°C
P05 bL	- Enable/Disable backlight	OFF
P06 CLr	- Clear All Records	***
P07 APO	- Enable / Disable Auto Power Off	ON
P08 rSt	- Reset	***

7 - MAINTENANCE

ELECTRODE CLEANING - pH / ORP

To ensure measurement accuracy and prolong the life of the pH/ORP electrode, perform regular cleaning (at least every two weeks) or when the electrode slope falls below 90%:

1) Prepare a container with an electrode cleaning solution (5% pepsin in HCl 0.1M solution);

2) Immerse the electrode tip in the solution for 20 to 25 minutes;

3) After this period, remove the electrode from the solution and rinse it thoroughly with distilled water;

4) Remove excess water using a soft paper towel;

5) Place the electrode in a reservoir with potassium chloride (KCl – 3M) solution and let it rest for at least 1 hour;

6) After resting, calibrate the instrument.

> *NOTES:*
> - *NEVER keep the electrode in the cleaning solution for more than 30 minutes;*
> - *NEVER use abrasives (brushes sandpaper, rough paper) to clean the electrode;*
> - *AKSO offers ready-to-use electrode cleaning solutions. Contact us for more information.*

BATTERY REPLACEMENT

When the display shows the indication 🔋, replace the battery as follows:

1) On the lower rear part of the pH Max, use a suitable screwdriver to remove the four screws that secure the compartment cover as illustrated in the image:
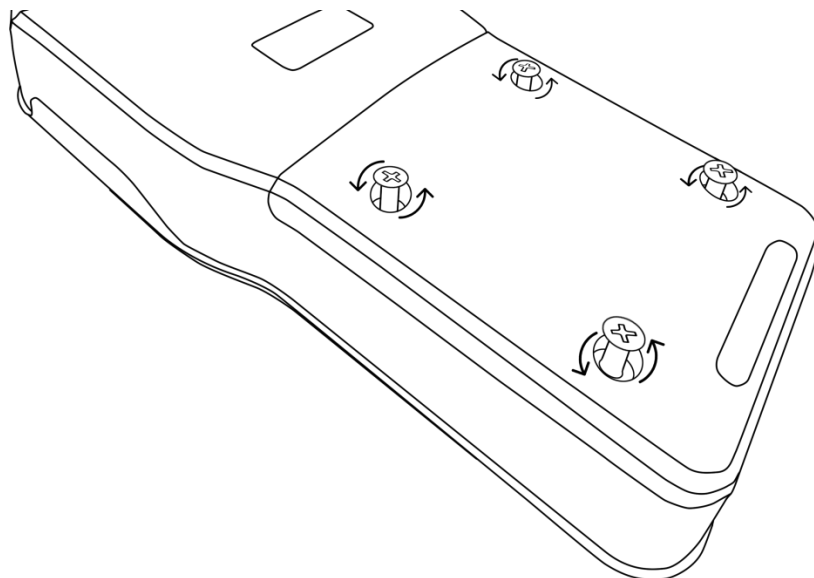
2) After removing the cover, carefully remove the 9V battery from the compartment and disconnect the clip;

3) Insert a new 9v battery preferably an alkaline one;

4) Reinstall the compartment cover using the same screws to ensure proper sealing.

 NOTE:

 • ALWAYS remove the battery if the product will be unused for more than seven days.

DISPOSAL OF BATTERIES AND ELECTRONICS

This product contains batteries and electronic components. Do not dispose of them with other common household waste. Deliver them to the appropriate collection center in accordance with local guidelines.

Important: *the correct disposal of electronics and batteries prevents negative effects on the environment and for human health!*

For more information about disposal services and locations, contact your local municipal office.

Akso guarantees its instruments against manufacturing defects with the following coverage: 2 wears for bench meters, portable and pocket testers and 6 months for electrodes/sensors (unless otherwise indicated).

The warranty period starts from the original date of purchase by the customer. The warranty is only valid if the product is used under normal conditions and in accordance with its operating limits and recommended maintenance procedures.

WARRANTY 2 YEARS

This instrument comes with a 2-year* warranty against manufacturing defects and a 6-month* warranty for the sensor/electrode/probe

*Legal warranty included

garantia@akso.com.br