

Electronic pH meter

LABOTRIX ACIDO G11

PRODUCT PASSPORT

Kyiv

2026

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1. General Information about the Product

- 1.1. **Product name** — Electronic pH Meter (wireless acidity sensor).
- 1.2. **Trademark** — Labotrix.
- 1.3. **Model** — Acido G11; full trade designation — LABOTRIX ACIDO G11.
- 1.4. **Manufacturer** — Labotrix Group Limited, China.
- 1.5. **Intended use:** the device determines the pH value of liquids and aqueous solutions — that is, the level of acidity or alkalinity of a medium. It is used during practical, laboratory, and field classes to study water and soil extracts, household acids and alkalis, buffer systems, and to observe the change in pH during acid-base titration. The product is intended for chemistry, biology, natural science, and geography classrooms and for STEAM laboratories of general secondary education institutions.
- 1.6. **Design features:** the product is made as a single all-in-one unit with its own color screen, so measurement requires neither a computer, nor a separate analog-to-digital converter, nor connecting wires. Control is reduced to five buttons, power is supplied by a removable battery, and results can be transmitted to an external device by wire or wirelessly. The sensing element is a glass combination pH electrode, which connects via a quick-release interface and, if needed, is replaced with a new one without tools. The housing provides a mounting point for installing the device on a laboratory stand.
- 1.7. **Application restrictions:** the product is a teaching aid and is not intended for industrial, medical, research, or commercial measurements. Its readings must not be used as a basis for assessing the quality of drinking water, food products, medicines, or technological processes, nor for preparing test reports.

2. Technical Specifications

- Brand — Labotrix
- Model — Acido G11
- SKU — LTX-ACIDO-G11
- Product type — wireless digital acidity sensor with its own screen
- Measured parameter — the tendency of liquids and aqueous solutions toward acidic or alkaline reaction (pH)
- pH measurement range — from 0.00 to 14.00
- Scale increment of the device (pH) — 0.01
- Measurement accuracy (pH) — ± 0.1
- Sensing element — glass combination pH electrode with a glass semi-permeable membrane
- Sensing element replaceability — the electrode is removable and user-replaceable
- Reference electrode's outer filling solution — potassium chloride at a concentration of 3 mol/L
- Calibration procedure — using standard buffer solutions, at two or three points on the scale
- Screen type — color liquid crystal digital display
- Screen diagonal (inch) — 1.8
- Controls — five function buttons
- Power source — built-in removable battery

- Measurement method — the reading is generated directly on the device's own screen; connection to a computer or tablet is not required to obtain the result
- Wired interface — USB, high-speed data transmission
- Wireless interface — data transmission to a terminal, computer, tablet, or cloud
- Compatible operating systems — iOS, Android, Windows
- Sensing element connector (piece) — 1, quick-release, compatible with the system's standard sensors
- Mounting — on a laboratory stand
- Operating temperature of the device (degrees Celsius) — from 0 to 60
- Software interface language — Ukrainian
- Language of marking and operating documentation — Ukrainian
- Product marking — trademark, model and a space for the inventory number
- Packaging — individual box of corrugated cardboard with the contents secured
- Documentation supplied — product passport with warranty card and operating manual
- Care of the device housing — wiping with a dry or slightly damp cloth is allowed
- User requirements — device preparation and calibration are performed by the teacher or laboratory assistant; students work under supervision
- Service life (year) — 5
- Warranty period (month) — 12

Overall dimensions, weight, battery capacity, and battery life are given in the packing list of the specific product version. The scale increment of 0.01 pH is not the same as the measurement accuracy: the accuracy actually achieved is determined by the freshness of calibration and the condition of the electrode.

3. Package Contents

- Wireless acidity sensor with color screen — 1 pcs
- Replaceable glass combination pH electrode — 1 pcs
- Electrode storage bottle with protective cap — 1 pcs
- Potassium chloride solution at a concentration of 3 mol/L — 1 bottle
- Calibration buffer solutions — set
- Protective case for storage and transport — 1 pcs
- USB cable — 1 pcs
- Laboratory stand mount — 1 pcs
- Operating manual — 1 pcs
- Product Passport and Warranty Card — 1 pcs
- Individual transport packaging — 1 pcs

The number of buffer solutions and their pH values are indicated in the packing list; go by the bottle labels, not memory. The charger is included depending on the product's version: multi-sensor sets include a shared charger for four sensors. Distilled water, a wash bottle, laboratory glassware, reagents, and filter paper are not included and are prepared by the educational institution itself. The product does not require assembly — the electrode is attached to the unit before the first measurement.

4. Safety Precautions

4.1. General requirements

- Before first use, read this passport and keep it together with the manual throughout the entire service life of the product.
- Students work with the device only after safety instruction and under the teacher's supervision.
- Preparation of the device, calibration, and electrode maintenance are performed by the teacher or laboratory assistant.
- Do not use the device's readings to draw conclusions about the fitness of water or food products for consumption.
- After the lesson, clean up the workplace, wash your hands, and dispose of the remaining solutions according to the rules in force at the institution.

4.2. Working with the Glass Electrode

- Hold the electrode by its housing; do not touch the lower part with the glass membrane with your hands.
- Do not allow the membrane to touch hard objects: a scratch or crack degrades accuracy or permanently disables the electrode.
- Remove a drop of liquid from the membrane only with a light touch of filter paper — wiping and rubbing the membrane is prohibited.
- Immerse the electrode in the solution so that it does not rest on the bottom or touch the walls of the vessel.
- Clean up fragments of a broken electrode with a brush and dustpan, as with laboratory glassware, not with your hands.

4.3. Chemical Safety

- Reagents are prepared and issued by the teacher; select concentrations that are the minimum sufficient for the experiment.
- When working with acids and alkalis, use safety goggles, gloves, and a lab coat.
- Do not measure the pH of hot solutions, melts, concentrated acids, or alkalis.
- Do not pour used buffer solutions back into the bottles: a single mistake spoils the entire supply.
- Operations with hydrofluoric acid during electrode regeneration (subsection 7.2) are performed only by the teacher or laboratory assistant in a fume hood, with no students present.

4.4. Electrical Safety and Battery Handling

- Do not immerse the measuring unit in liquid, do not wash it under running water, and do not let solutions get onto the screen, buttons, or connectors.
- Do not use the device with a cracked screen, damaged housing, cable, or a deformed battery.
- Charge the product at room temperature, on a non-flammable surface, without covering it; remove the battery only when the device is switched off.
- Use only the battery and charger specified for the product's version.
- Take a spent battery to a collection point; do not dispose of it with household waste.

4.5. It is strictly prohibited

- Leaving the electrode's glass membrane dry or storing the electrode without solution.
- Rubbing, scraping, or wiping the membrane with anything other than light contact with filter paper.
- Immersing the measuring unit in liquid or cleaning it with solvents, acetone, or abrasive agents.
- Keeping the electrode in distilled water, protein solutions, or acidic fluoride solutions for a long time, or allowing the membrane to contact silicone grease.
- Disassembling the measuring unit, repairing the electronic part, or opening the battery.
- Allowing students to perform operations with hydrofluoric acid.
- Using the product outside the educational process — for industrial, medical, or commercial control.

5. Preparation for Use

- 5.1. Unpack the product and inspect it: the housing, screen, connectors, and cable must be undamaged, the electrode's glass membrane — free of cracks, scratches, and coating, and the storage bottle must contain solution. Keep the factory packaging for transportation.
- 5.2. Fully charge the battery before first use. Charge it using the charger specified for the product's version, or via the USB connector if this is indicated in the packing list. Do not leave the device unattended while charging.
- 5.3. Turn on the device and wait for the working screen to appear. Check the battery level, as well as the correctness of the date, time, and display units — this is important if results will be saved to memory and transferred to a computer.
- 5.4. Unscrew the cap and remove the electrode from the storage bottle. Inspect the membrane inside the plastic guard: there must be no air bubbles, coating, or mechanical damage.
- 5.5. Open the filling port on the electrode's side tube to equalize the pressure. Check the level of the outer filling solution and, if necessary, top up with 3 mol/L potassium chloride solution through the upper opening. The solution level inside the electrode must be higher than the liquid level in the sample.
- 5.6. Rinse the electrode tip with distilled water from a wash bottle over a separate beaker, then remove the drop with a light touch of filter paper.
- 5.7. Attach the electrode to the measuring unit using the quick-release connector until it clicks firmly into place; the connector must be clean and dry. Fasten the device to a laboratory stand so that the electrode lowers into the vessel vertically and the screen faces the observer.
- 5.8. If the solution in the storage bottle has dried up and the membrane has dried out, soak the electrode in 3 mol/L potassium chloride solution for several hours, and only then proceed to calibration. Plan this in advance: it will not be possible to prepare such an electrode immediately before the lesson.

- 5.9. Prepare the workplace: a beaker of distilled water, a wash bottle, a waste beaker, filter paper, and clean beakers for samples and buffer solutions. Keep the buffer solutions and samples in the laboratory so that they reach the same temperature, close to room temperature.

6. Operating Procedure

6.1. Calibration Using Buffer Solutions

Calibration — a mandatory operation before measurement. An uncalibrated device shows a number that is not the pH value of the sample. The electrode is calibrated by the slope of its characteristic, and the pH value of the calibration buffer must be close to the expected pH of the sample.

- Calibrate at the start of each lesson, as well as after replacing, cleaning, or long-term storage of the electrode, after a change in temperature conditions, and before moving to samples from a different part of the scale.
- For acidic samples, use neutral and acidic buffers; for alkaline samples — neutral and alkaline; for titration, if the device supports it, set three points.
- Pour the buffers into separate clean beakers so that the electrode is fully immersed. Immersing the electrode in the buffer bottle is prohibited.
- Rinse the electrode with distilled water, remove the drop with filter paper, and enter calibration mode.
- Immerse the electrode in the first buffer, gently stir the solution, and wait until the reading stops changing. Premature confirmation of the point — the most common cause of poor calibration.
- Set the buffer's pH value according to the label and confirm the point, then rinse the electrode and repeat the operation with the next buffer.
- Finish the calibration, save its result, and check the device on a fresh portion of one of the buffers: the reading must match the value on the label within the resolution.
- Record the date, time of calibration, and the values of the buffers used — this data shows when the calibration has become outdated.

6.2. Measuring the Sample

- Make sure the device is calibrated and charged, and that the filling port of the electrode's side tube is open.
- Pour the sample into a clean beaker of a volume sufficient for the electrode to be fully immersed. Collect samples using the same procedure as for the buffers, otherwise the results will not be comparable.
- Rinse the electrode with distilled water and remove the drop with filter paper.
- Immerse the electrode in the solution completely — both the glass membrane and the side tube's diaphragm must be under the liquid.
- Gently stir the solution so that no stagnant layer remains near the membrane, and let the reading stabilize. In dilute and weakly buffered solutions, stabilization takes noticeably longer.
- When working with a magnetic stirrer, make sure the stir bar does not strike the membrane; stop the stirrer before reading the value.

- Read the value from the screen and enter it in the table together with the sample temperature and measurement time.
- Always rinse the electrode between samples: residue from the previous sample distorts the next result, especially when moving from acidic solutions to alkaline ones.

6.3. Autonomous Operation and Field Measurement

- The device works without a computer or wires: the result appears immediately on its own screen, so the product is suitable for whole-class work and for measurements outside the classroom.
- For field trips and water or soil sampling, charge the battery in advance and bring a spare one, distilled water, a wash bottle, and labeled sample containers.
- Measure field-collected samples on site, or let them reach room temperature in the laboratory — otherwise the reading will be shifted by the electrode's temperature dependence.

6.4. Data Transmission and Working with the Software

- Use the wired USB connection when you need to quickly download the accumulated data array, or when the wireless connection in the room is unstable.
- The wireless channel allows students to work at different points in the classroom, and the teacher — to see the data of all groups on one terminal. The mode is turned on from the device menu.
- The software has a Ukrainian-language interface, displays results as tables and graphs, and supports export to spreadsheet editors for preparing reports.
- Simultaneous reading of several sensors makes it possible to compare the change in pH with the change in another quantity in the same experiment; the quick-release interface is compatible with the system's standard sensors.

6.5. Finishing the work

- Rinse the electrode tip with distilled water and remove the drop with filter paper.
- Put the protective cap with a small amount of 3 mol/L potassium chloride solution onto the electrode and close the filling port of the side tube.
- Turn off the device, disconnect the cable, and place the product in the protective case.

7. Care, Maintenance and Troubleshooting

7.1. Rinsing, Cleaning, and Storage

- The electrode membrane must not dry out: after each lesson, store the electrode in the cap with 3 mol/L potassium chloride solution.
- Wipe the measuring unit with a dry or slightly damp soft cloth; immersing it in liquid is prohibited.
- Contaminants that settle on the membrane or clog the diaphragm passivate the electrode: the response becomes slow, and the readings — unstable. Fatty and protein contaminants are removed with appropriate cleaning solutions, mineral deposits — with dilute acid.

- After any cleaning, rinse the electrode with distilled water, soak it in 3 mol/L potassium chloride solution, and be sure to recalibrate.
- Store the product in the protective case, in a dry room at room temperature, away from direct sunlight, separately from heating appliances and reagents.

7.2. Periodic Inspection and Regeneration of the Electrode

- Before each series of measurements, check the calibration against a control buffer, as well as the filling solution level in the electrode.
- If the device is not used for a long time, periodically recharge the battery: a fully discharged battery left for months loses capacity.
- If the slope of the electrode's characteristic has decreased and calibration does not restore normal operation, the electrode is regenerated: the membrane is soaked in 4% hydrofluoric acid solution for 3–5 seconds, rinsed with distilled water, held for several hours in 0.1 mol/L hydrochloric acid solution, rinsed again, then soaked in 3 mol/L potassium chloride solution and recalibrated.
- Hydrofluoric acid causes severe burns that appear with a delay. Regeneration may be performed only in a fume hood, wearing safety goggles, resistant gloves, and a lab coat. If the institution has no fume hood or proper protective equipment, do not perform regeneration — replace the electrode with a new one.
- The glass electrode is a consumable item: once its service life is exhausted, it is replaced. Repair of the measuring unit is performed only by an authorized service center.

7.3. Possible malfunctions and methods of their elimination

Symptom	Possible cause	User actions
Reading is unstable, the value does not settle	Filling port closed; insufficient filling solution; electrode not fully immersed; air bubble near the membrane; damp connector	Open the filling port, top up the potassium chloride solution, immerse the electrode completely, shake it gently, rinse the membrane, dry the connector
Response is slow, the reading takes a very long time to settle	Membrane passivation by contaminants; dried-out or aged electrode; weakly buffered sample; low solution temperature	Rinse and clean the electrode, soak it in potassium chloride solution, recalibrate, and let the sample warm up to room temperature
Device does not accept a calibration point, or the reading in the buffer differs from the label	Expired, diluted, or reused buffers; electrode not rinsed between points; decreased slope of the characteristic	Take fresh buffers in separate beakers, rinse the electrode between points, repeat the calibration; if necessary, regenerate or replace the electrode
Reading is stable but noticeably differs from the expected value	Outdated calibration; residue of the previous sample on the electrode; different temperatures of the sample and the buffers	Rinse the electrode, equalize the temperatures, and perform a new calibration using buffers close to the sample's pH

Symptom	Possible cause	User actions
Device does not turn on or turns off during operation	Discharged or loosely installed battery; device overcooling or overheating	Charge the battery, check that it is properly installed, keep the device at room temperature, and try switching it on again
Wireless connection is not established or is interrupted	Mode not turned on in the menu; device out of range or behind an obstacle; software not running on the terminal; battery discharged	Turn on wireless mode, reduce the distance to the terminal, restart the software, and repeat the device search; as a temporary solution, work via USB
Data is not transmitted via the cable	Cable is not intended for data transmission or is damaged; transmission mode not selected; software not installed	Replace the cable, turn on the data transmission mode in the device menu, check whether the software is installed and running

If the malfunction is not resolved by the actions listed, stop using the device and contact the supplier.

8. Storage and Transportation Conditions

- Store the product in the protective case, in a heated room at a temperature of not less than +5 and not more than +40 °C and relative humidity of not more than 80 % without condensation.
- Store the electrode only with 3 mol/L potassium chloride solution under the cap; dry storage renders the membrane unusable.
- Protect the product from direct sunlight, dust, acid and alkali vapors, and from proximity to heating appliances.
- Transport the product in its factory packaging by any type of enclosed transport, protecting it from impacts, vibration, and tipping over; transport the electrode in the storage bottle.
- After transportation at a low temperature, keep the product indoors for at least two hours before switching it on.
- The storage period is unlimited provided that the stated conditions are observed.

9. Warranty Obligations

- 9.1. The warranty period of operation of the product is 12 months from the date of sale specified in the warranty card.
- 9.2. The manufacturer guarantees that the product conforms to the declared technical specifications provided that the transportation, storage and operating rules set out in this passport are observed.
- 9.3. During the warranty period, defects of the product that have arisen through the fault of the manufacturer are remedied free of charge. The method of remedy (repair, replacement of a component or replacement of the product) is determined by the service center.

- 9.4. Warranty service is provided on presentation of a correctly and completely filled-in warranty card and of a document confirming the fact and the date of purchase.
- 9.5. The warranty does not cover cases where the malfunction is caused by:
- mechanical damage, in particular cracks, chips and deformation of the housing and of the components of the product;
 - violation of the operating, storage or transportation rules set out in this passport;
 - ingress of liquid or foreign objects into the product, and also the action of insects and animals;
 - independent disassembly, repair or modification of the product, in particular repair at unauthorized workshops;
 - use of the product other than for its intended purpose;
 - force majeure circumstances (fire, flood, earthquake, etc.).
- 9.6. The warranty does not cover the natural wear of the coating and of the appearance of the product, nor consumables.

10. Product Disposal

- The product must not be disposed of together with unsorted municipal waste. This is indicated by the marking in the form of a crossed-out container on the product or its packaging.
- After the end of the service life, hand the product over to a collection point for the corresponding waste or to an organization holding the appropriate permit.
- Hand over the packaging elements (cardboard, polymer materials) to the corresponding streams of recyclable materials.

Contacts

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Conditions of use and storage of the product

The product is intended for educational work in general secondary education institutions and is used only under the control and supervision of a teaching staff member; the recommended age of students — from 10 years, that is, students of grade 5 and of higher grades. Keep the product in a dry, clean and ventilated room at a temperature from +5 to +40 °C and relative air humidity up to 80 % without condensation, separately from heat sources and out of direct sunlight, moisture and dust. Use the product exclusively for its intended purpose and do not allow drops, impacts or other mechanical damage. If you notice damage, a crack or any malfunction, stop working with the product immediately and inform the teacher or the responsible person of the educational institution; repairing the product on your own is prohibited.

WARRANTY CARD

Name:	Electronic pH meter
Product model:	LABOTRIX ACIDO G11
Serial number:	
Date of sale:	
Warranty period:	12 months from the date of sale
Trading organization:	
Signature of the seller:	

The goods have been received in working order, without visible damage, complete, and have been checked in my presence. I have no claims regarding the quality of the goods; I have read and agree to the operating and warranty service conditions.

Full name of the buyer _____

Telephone of the buyer _____ Signature of the buyer _____

Dear Customer!

Thank you for choosing Labotrix products. After-sales service of this product is provided in accordance with the regulations of the company and the legislation of the country of sale. So that we can serve you quickly and without unnecessary formalities, check that this warranty card is filled in correctly at the moment of purchase and keep it together with the payment document throughout the entire warranty period. When applying for repair, hand the product over to the seller or to the service center together with the filled-in card.

Procedure for applying

1. The right to free warranty service of the product is valid for 12 months from the date of sale specified in the warranty card. Within this period, components that have failed because of a manufacturing defect are repaired or replaced at no cost to the buyer.
2. Before applying, make sure that the malfunction is not caused by the reasons listed in section 9 of this passport and, if possible, use the table of possible malfunctions in subsection 7.3.
3. After the end of the 12-month warranty period, repairs are performed on a paid basis; the cost of the work and of the spare parts is determined depending on the nature of the malfunction.

Grounds for refusal of warranty service

The company reserves the right to refuse free service or to perform the work on a paid basis if at least one of the following circumstances is established:

- absence of the warranty card, its incomplete or corrected completion, and also the absence of a document confirming the purchase;
- non-conformity of the serial number of the product with the number specified in the card, or damage to the factory marking;
- traces of independent disassembly, repair or modification of the product;
- damage caused by violation of the operating rules, connection to an unsuitable power source or external mechanical impact;
- damage as a result of force majeure circumstances.

Service Records

Date of entry	Description of the malfunction	Work performed	Position, signature, full name of the responsible person