

Tellurion

LABOTRIX TELLUR G10

PRODUCT PASSPORT

Kyiv

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1. Basic product information

- 1.1. Product name — Tellurium.
- 1.2. Trademark — Labotrix.
- 1.3. Model — Tellur G10; full trade name — LABOTRIX TELLUR G10.
- 1.4. Manufacturer — Labotrix Group Limited, China.
- 1.5. Intended use: a mechanical device that dynamically reproduces the relative position of the Sun, Earth, and Moon; it is used in geography and astronomy classes. By rotating the handle, the Earth's globe describes a circle around a model of the Sun, simultaneously rotating around its own axis, and the satellite-ball of the Moon orbits the globe in the same cycle. Thanks to these movements, the device illustrates the change of day and night, the alternation of seasons, polar day and polar night, the phases of the satellite, as well as solar and lunar eclipses. The drive is manual: the teacher chooses the rotation speed and the stopping point for detailed consideration independently.
- 1.6. Design features: In the center of the model, a sphere is fixed on a fixed stand, which acts as the Sun; the boundary between day and night on the Earth globe is demonstrated by an external light source directed along the plane of the orbit from the side of the Sun model. The axis of the globe is constantly tilted by 23.5° , which simulates the real tilt of the Earth's axis. The sphere of the Moon rotates around the Earth on a special bracket, changing the visible illuminated part and demonstrating the phases of the Moon. The circular scale on the base is marked with the names of the months to determine the position of the Earth in orbit.

2. Technical specifications

- Brand — Labotrix
- Model — Tellur G10
- The article is LTX-TELLUR-G10
- Product type — mechanical demonstration model of the mutual motion of the Sun, Earth, and Moon
- Assembled product dimensions, L×W×H (centimeters) — approximately $40 \times 20 \times 30$
- Drive type — manual, by turning the handle
- Power supply is not required, the drive and demonstration are purely mechanical
- The inclination of the Earth's globe axis (degrees) is 23.5 to the perpendicular to the orbital plane.
- The direction of the axis during movement is unchanged, remaining parallel to itself
- The calendar scale on the base is circular, with divisions by month to determine the date of the Earth's passage through orbit.
- Language of notation — Ukrainian

- Demonstration possibilities - change of day and night, change of seasons, solstices and equinoxes, polar day and polar night, phases of the moon, solar and lunar eclipses
- Designed for classrooms - geography, astronomy
- Materials and dimensions of parts - according to the packing list
- Weight - according to the packing list
- Product marking — trademark, model and a space for the inventory number
- Packaging - individual corrugated cardboard box with fixation of the model and moving parts
- Documentation supplied — product passport with warranty card and operating manual
- Operating conditions — premises of an educational institution, air temperature from +5 to +40 °C, relative humidity from 40 to 60 % without condensate
- Installation method - on a demonstration table, no prior assembly required
- User requirements - preparation and demonstration are carried out by the teacher, students observe under supervision
- Visibility during demonstration - the scale and moving elements are readable from a distance of several meters, suitable for showing to a group of students
- Service life (year) — 5
- Warranty period (month) — 12

3. Equipment

- Tellurium assembly (base with limb, "Sun" node, rod-bracket with Earth globe and Moon sphere) — 1 pc.
- Product Passport and Warranty Card — 1 pcs
- Individual transport packaging — 1 pcs

The exact contents of the kit are listed in the packing list. After unpacking, check that all items are included. We recommend that you keep the original packaging for storing the model during holidays and transportation.

4. Safety measures

4.1. General requirements

- Before first use, read this passport and thereafter keep it together with the product and the document of purchase.
- The model is intended for teacher demonstrations in educational institutions. Students may only operate the product under the supervision of an adult who has received occupational safety training.
- Inspect the unpacked product: the Earth globe, the Moon sphere, the rod, the bracket, and the base should be intact, without cracks, and the globe axis should not be bent.

4.2. Mechanical safety and handling of the model

- Protect the model from falls and impacts: the Earth globe, the Moon sphere, and the limbo may crack or lose the accuracy of the markings.
- Keep fingers away from the gear and pivot joints of the bracket when the model is in motion.
- Do not immerse the model in water or wash it under the tap - moisture damages the gears and metal parts.
- Do not lubricate the gearbox and gears yourself; grease collects dust and accelerates wear.

4.3. Safety when rotating the drive

- Turn the handle smoothly, without jerking. Do not accelerate the movement by pushing the globe, bar or Moon bracket with your hand.
- Rotate the drive only in the operating direction - counterclockwise when looking at the model from above. Rotating in the opposite direction will damage the gearing.
- The model has moving parts that extend beyond the base. Place it away from the edge of the table to prevent the bar from hitting anyone.
- Do not carry the model by the bar, globe, or bracket - hold it by the base with both hands.

4.4. It is strictly forbidden

- Disassemble the drive unit or gear yourself.
- Use the model as a toy, swing it or turn the handle with excessive force.
- Leave the model in motion unattended during class.
- Allow younger children to work independently with the model without the presence of an adult.

5. Preparation for work

- 5.1. Unpack the product and remove the packaging inserts and protective tapes from the moving parts. We recommend that you keep the packaging.
- 5.2. Inspect the model: the Earth globe, the Moon sphere, the rod, the bracket, the Sun sphere, and the base should be intact, without cracks; the axis of the globe should not be bent.
- 5.3. Check the completeness according to section 3 of this passport and the packing list.
- 5.4. Place the model on a flat, hard, horizontal surface on the display table so that it is stable and does not wobble. Leave space around the model as the rod will circle as it rotates.
- 5.5. If necessary, to demonstrate the change of day and night, prepare a separate light source (a table lamp without a shade or other directional light); determine in advance which side of the model to place it on.

- 5.6. Return the model to its working position, orienting it so that the location of the Sun model corresponds to the direction of the future light source.
- 5.7. Turn the handle smoothly a full turn. The rod and globe should move without jamming, and the Moon ball should not touch the globe and base.
- 5.8. Make sure that the inscriptions on the limb are visible from the students' seats; rotate the model if necessary.

6. Procedure

6.1. Preparing the classroom and setting the situation

- Place the model on a separate table in the center of the classroom, around which you can walk, as some phenomena are only visible from a certain direction.
- Place the prepared light source on the side of the Sun model, directing the beam along the plane of the orbit onto the Earth globe.
- Darken the classroom: Close the windows and turn off the overhead light, leaving only the prepared light source on. Without darkening, the line between light and shadow on the globe and the moon ball is unclear, and most demonstrations lose their clarity.

6.2. Rotation and selection of positions

- Turn the handle counterclockwise when looking at the model from above - this is the direction the Earth actually orbits and rotates on its axis.
- To set the desired date, bring the Earth to the corresponding month mark on the limb, looking at the pointer on the rod or the globe itself.
- Stop the model in this position and give students time to examine it.

6.3. Change of day and night and seasons

- By rotating the globe around its axis with your hand, show how the same point on the surface moves from the shaded part (night) to the illuminated part (day) and back again.
- Slowly move the Earth from the "June" position to the "December" position, paying attention to the constant direction of the Earth's axis and which pole is tilted towards the Sun in each season.

6.4. Moon phases and eclipses

- Hold the Earth in one position and slowly move the Moon bracket in a circle around the Earth, stopping at four positions (new moon, first quarter, full moon, last quarter).
- Look at the Moon "from the Earth's side" or suggest that a student do this: wave the changing visible illuminated part.
- To demonstrate eclipses, bring the Moon to the new moon position (solar eclipse) and full moon (lunar eclipse), observe the shadow on the globe and ball.

6.5. Completion of work

- Do the demonstrations one at a time: first just the daily rotation, then just the annual motion, then just the lunar rotation. Don't mix the motions in one demonstration—it makes it harder to understand.
- Stop the model at key positions and give students time to sketch the diagram in their notebooks.
- When finished, turn off or remove the auxiliary light source and return the model to its original position.

7. Care, maintenance and possible malfunctions

7.1. Cleaning

- Wipe the model with a soft dry or slightly damp cloth. Wipe the Earth globe and the Moon ball carefully so as not to damage the applied image.
- Remove dust from under the gears and gearbox with a dry brush.
- Do not use solvents, alcohol, acetone or abrasive powders.

7.2. Periodic control

- At least once a month, turn the model over and make sure that the globe and moon ball are firmly attached and have not rotated.
- Check the direction of rotation of the drive before training: the movement should be smooth, without crunching or sticking.
- The product does not require lubrication, calibration or other maintenance operations on the part of the user. Repairs are performed only by an authorized service center.

7.3. Possible malfunctions and ways to eliminate them

Symptom	Possible cause	User actions
The boundary between light and shadow on the globe is blurred.	The room is not sufficiently darkened; the light source is not located on the side of the Sun model.	Additionally, close the windows and turn off unnecessary lighting; align the light source along the orbital plane on the side of the Sun model
The handle turns with difficulty or with a creaking sound	Dust, lint, or foreign object in the transmission; the model has been previously lubricated	Clean the gear with a dry brush; remove excess grease with a cloth; do not re-grease
The rod or globe does not move when the handle is turned.	Gear transmission is broken; assembly fastening is loose	Do not use force or disassemble the drive - contact your supplier.

Symptom	Possible cause	User actions
Model sways on the table	Uneven table surface; base supports are loose	Move to a flat, hard surface; check and tighten base fasteners.
The globe spins or slips off its axis	The globe's fastening on the axis has loosened.	Carefully place the globe in place and tighten the fasteners; do not use force.

8. Storage and transportation conditions

- Store the model in a dry, heated room at a temperature not lower than +5 and not higher than +40 °C and a relative humidity of up to 80% without condensation.
- Cover the model from dust and protect it from direct sunlight, heating devices, shocks and vibrations.
- Transport the product only in the original or similar rigid packaging, with movable parts secured. Do not place heavy objects on the packaging.
- The storage period before commissioning is unlimited provided that the stated requirements for temperature, humidity and protection against damage are observed.

9. Warranty obligations

- 9.1. The warranty period of the product is 12 months from the date of sale specified in the warranty card.
- 9.2. The manufacturer guarantees that the product complies with the declared technical characteristics, provided that the rules for transportation, storage and operation set out in this passport are followed.
- 9.3. During the warranty period, product defects that have arisen due to the manufacturer's fault will be eliminated free of charge. The method of elimination (repair, component replacement or product replacement) is determined by the service center.
- 9.4. Warranty service is provided upon receipt of a correctly and completely filled out warranty card and a document confirming the fact and date of purchase.
- 9.5. The warranty does not apply to 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 apply to natural wear and tear of the coating and appearance of the product, as well as to consumables.

10. Product disposal

- The product is not electrical or electronic equipment, therefore the marking in the form of a crossed-out container does not apply to it.
- After the end of the service life, the product is disposed of according to the rules established at the institution that operated it, with prior separation by materials.
- 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

Product name:	Tellurion
Product model:	LABOTRIX TELLUR G10
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

Buyer's phone number Buyer's signature

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 for the product is valid for 12 months from the date of sale specified in the warranty card. Within this period, components that have failed due to a manufacturing defect are repaired or replaced without payment from the buyer.
2. Before contacting, 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 section 7.3.
3. After the 12-month warranty period, repairs are carried out for a fee; the cost of work and 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