

Demonstration power supply unit

LABOTRIX POWER U1

PRODUCT PASSPORT

Kyiv

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1. Basic product information

- 1.1. Product name — Demonstration power supply.
- 1.2. Trademark — Labotrix.
- 1.3. Model — Power U1; full trade name — LABOTRIX POWER U1.
- 1.4. Manufacturer — Labotrix Group Limited, China.
- 1.5. Intended use: The Power U1 demonstration power supply is designed for use in educational institutions, laboratories and on production lines when conducting experiments in electronics, electrical engineering and electric energy. The device provides adjustable voltage from 0 to 30 volts and current from 0 to 5 amperes, maintaining high voltage and current stability. The power supply is equipped with a function of automatic switching between stabilized voltage and stabilized current modes, which allows you to connect different types of loads without the risk of damage.
- 1.6. Design features: The front panel is equipped with two digital displays in a four-digit format for displaying voltage and current with high accuracy. For convenient adjustment, four adjustment knobs are provided: two for coarse and fine adjustment of voltage and current. The device has built-in indicators of operating modes (voltage or current stabilization), a manual switch and three output terminals: positive (red), negative (black) and ground (green). The fan with temperature control automatically turns on when the internal temperature exceeds 50 °C to ensure reliable cooling.

2. Technical specifications

- Brand — Labotrix
- Model — Power U1
- The article number is LTX-POWER-U1
- Product type — demonstration power supply with smooth voltage and current regulation
- Input voltage (volts) — 180–230 AC, nominal $\pm 10\%$
- Input frequency (hertz) — 50 or 60
- Output voltage — constant, stabilized, smoothly adjustable
- Output voltage range (volts) — from 0 to 30
- Output current range (amperes) — from 0 to 5
- Voltage stability under load (percent plus millivolts) — $\leq 0.1\% + 10 \text{ mV}$
- Voltage stability when changing input voltage (percent plus millivolt) — $\leq 0.1\% + 10 \text{ mV}$
- Current stability (percentage plus milliamperes) — $\leq 0.1\% + 10 \text{ mA}$
- Current stability under load (percentage plus milliamperes) — $\leq 0.1\% + 20 \text{ mA}$
- Digital voltmeter accuracy (percentage plus units) — $\pm 0.1\% + 2$
- Digital ammeter accuracy (percentage plus units) — $\pm 0.1\% + 2$
- Voltage display — four-digit LED, resolution 0.01 V

- Current display — four-digit LED, resolution 0.001 A
- Voltage selection mode - coarse and fine adjustment with separate knobs
- Current selection mode - coarse and fine adjustment with separate knobs
- Current limiting function (fuse) - automatic CV/CC switching with indication
- Device dimensions (millimeters) — 260×125×145
- Device weight (kilograms) — 2.3
- Operating temperature (degrees Celsius) - from –10 to +40
- Relative humidity (percentage) - less than 80
- Fan — built-in, turns on at a temperature >50 °C
- 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
- Installation method - desktop, at the teacher's workplace
- User requirements - the load is connected by a teacher or laboratory assistant, students work under supervision
- Service life (year) — 5
- Warranty period (month) — 12

3. Equipment

- Power supply unit with front panel and digital displays — 1 pc.
- AC power cord with plug — 1 pc.
- Set of mounting brackets for mounting on a rail — 1 pc.
- Set of contact terminals for connecting the load (red for +, black for –) — 1 set.
- Ground terminal (green) — 1 pc.
- Replaceable fuse (spare set) — 2 pcs.
- Product Passport and Warranty Card — 1 pcs
- User manual (abridged version) — 1 pc.
- Individual transport packaging — 1 pcs

The power supply is supplied ready to use and requires no assembly. It is recommended to have spare fuses and contact terminals in reserve.

4. Safety measures

4.1. General requirements

- Before first use, read this passport carefully, especially the sections on safety and special requirements for educational institutions.
- The chapel is used by a teacher or an adult who has received instructions on occupational health and electrical safety. Students are allowed to work only under the constant supervision of an adult.
- Before connecting for the first time, check that the input voltage is correct (180–230 V AC, 50/60 Hz).

- Do not operate the device if there is visible damage to the housing, power cord or terminals.

4.2. Electrical safety

- The power switch should remain in an easily accessible location and not be covered by foreign objects.
- The appliance must be properly grounded through the third wire of the power cord to prevent electric shock.
- When working with a load, do not touch exposed wires and metal terminals during operation.
- Before replacing the fuse, turn off the power and wait for the appliance to cool down (at least 5 minutes).

4.3. Mechanical safety and conditions of use

- Ventilation: Ensure sufficient air circulation around the device, especially near the rear panel where the cooling radiator is located.
- Temperature conditions: do not operate the device at ambient temperatures above 40 °C or below –10 °C.
- Humidity: Only use the power supply in rooms with a relative humidity of less than 80%.

4.4. It is strictly forbidden

- Leave the appliance switched on unattended for a long time.
- Do not immerse or pour water or other liquids on the device; do not wash under running water.
- Disassemble the device body or remove any panel seats with the power on.
- Short-circuit the + and – terminals during operation without setting the current limit.
- Use fuses of a different rating than those specified in the instructions.
- Operate the device in an environment with flammable, explosive materials or vapors.

5. Preparation for work

- 5.1. Unpack the power supply and check its completeness, the location of the terminals, and the integrity of the power cord.
- 5.2. Install the power supply on a horizontal, stable surface in a well-ventilated place, protected from vibrations and moisture.
- 5.3. Check the position of the line voltage switch on the housing and make sure that it is set to 220 V for European networks (if provided).
- 5.4. Connect the power cord to a standard AC 220 V outlet (210–230 V according to the permissible tolerance).
- 5.5. Turn the power switch to the “OFF” position and wait 10–15 seconds for the internal electronic components to stabilize.

- 5.6. Make sure that the voltage and current adjustment knobs are in the minimum position (near the far left position) before turning the switch to the “ON” position.

6. Procedure

6.1. Starting the device

- Turn the power switch to the "ON" position - the displays should show 0 V and 0 A.
- The CV (constant voltage) mode indicator should be on.
- Allow the device to warm up for 5 minutes before connecting the load.

6.2. Voltage and current settings

- Use the VOLTAGE coarse adjustment knob to set the approximate output voltage you want.
- Use the VOLTAGE fine adjustment knob to fine-tune to the desired value.
- Use the CURRENT adjustment knobs to set the maximum current allowed for the load (overload limit).
- When set correctly, the CV indicator lights up if the load is rated.

6.3. Load connection

- Make sure the output terminals are clean and the contacts are securely fastened in the metal clips.
- Connect the positive load terminal to the + (red) terminal, the negative to the – (black) terminal.
- If necessary, ground the load by connecting it to the GND (green) terminal to reduce ripple.

6.4. Operating mode control

- Observe the voltage and current displays. At rated load, the voltage will remain constant (CV mode).
- If the load exceeds the set current limit, the device will automatically switch to CC (constant current) mode and the voltage will decrease.
- After the load is reduced, the device will return to CV mode.

6.5. Completion of work

- Turn the voltage and current adjustment knobs to the minimum position.
- Disconnect the load from the power terminals.
- Turn the switch to the “OFF” position.
- Allow the appliance to cool down for 15-20 minutes before switching it on again.

7. Care, maintenance and possible malfunctions

7.1. Cleaning

- Wipe the cabinet and front panel with a dry, soft cloth monthly or as needed.

- To remove stubborn dirt, use a cloth lightly dampened with alcohol, then wipe dry.
- Do not allow moisture to enter the digital displays and ventilation openings.
- Remove dust from the ventilation holes with a special brush or compressed air.

7.2. Periodic control

- Check the reliability of the contact terminals every month - they should be clean and tightly clamped.
- Check the condition of the power cord for cracks, burns, or damaged insulation.
- Check the condition of the fuse every quarter: if it is blown, this indicates a short circuit in the load or a malfunction of the device.
- If the device does not function normally, contact an authorized service center.

7.3. Possible malfunctions and ways to eliminate them

Symptom	Possible cause	User actions
The device does not turn on.	Fuse blown; no mains power; cord incorrectly connected	Check the power supply to the outlet; check that the cord is connected correctly; replace the fuse
Displays do not light up	The device is not powered; the power plug is loose.	Make sure the cord is firmly plugged into the outlet; turn the appliance back on.
The output voltage does not change.	Voltage adjustment knob does not work; mechanical damage; circuit glitch	Check that the handle rotates freely; turn it lightly a few times; turn the appliance back on.
CC mode lights up constantly	Load is too large or shorted; current limit is set too low	Reduce the load; check the terminal connection sequence; increase the current limit value by 10%.
The appliance is getting hot.	Long-term operation without ventilation; clogging of the cooling radiator	Reduce the load power; let the appliance cool down for 30 minutes; remove dust from the back panel
Voltage ripple is large	High current load; grounding not connected properly	Connect the GND terminal to the load ground; reduce the load current

8. Storage and transportation conditions

- Store the power supply in a dry, indoor location at a temperature of +5 °C to +40 °C and a relative humidity of no more than 80%.
- Protect the device from dust, steam, vibrations and direct sunlight during storage.
- Check the condition of the fuse and contact terminals before long-term storage; remove any visible dust.
- Do not leave the device switched on during long-term storage - this will shorten the life of the capacitors.
- When transporting, keep the power supply in an upright position, protecting it from mechanical shock and vibration.
- Pack the device in its original packaging or in a protective case to prevent damage.
- The storage period before commissioning is not limited, provided that the above temperature and humidity requirements are met.

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 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

Product name:	Demonstration power supply unit
Product model:	LABOTRIX POWER U1
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