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Operating Manual

Biometra Power Pack P25/P25 Timer
Standard Power Supplies

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For a proper and safe use of this product follow the instructions. Keep the operating manual for future reference.

General Information http://www.analytik-jena.com

Documentation Number 34-9990-142-23

Edition B (01/2024)

Technical Documentation Analytik Jena GmbH+Co. KG

Table of contents

1 Notes on this operating manual

Content

This user manual describes the following device models:
- Biometra Power Pack P25
- Biometra Power Pack P25 Timer with timer function

In this manual, these models are referred to as the Biometra P25 and Biometra P25T, or simply as **device**. Any differences between the models are explained in the relevant section.

The device is intended to be operated by qualified specialist personnel under observance of the operating manual.

The operating manual provides information about the design and operation of the device and provides operating personnel with the necessary know-how for safe handling of the device and its components. Furthermore, the operating manual includes information on the maintenance and servicing of the device as well as information on potential causes of malfunctions and their correction.

Conventions

Instructions for actions occurring in chronological order are numbered and combined into action units.

Warnings are indicated by a warning triangle and a signal word. The type, source and consequences of the hazard are stated together with notes on preventing the hazard.

Elements of the control and analysis program are indicated as follows:
- Program terms are in bold (e.g., the **System** menu).
- Menu items are separated by vertical lines (e.g., **System** | **Device**).

Symbols and signal words used in this manual

The user manual uses the following symbols and signal words to indicate hazards or instructions. These warnings are always placed before an action.

WARNING

Indicates a potentially hazardous situation which can cause death or very serious (possibly permanent) injury.

CAUTION

Indicates a potentially hazardous situation which can cause slight or minor injuries.

NOTICE

Provides information on potential material or environmental damage.

2 Intended use

The Biometra P25 and the Biometra P25T can be used with various electrophoresis devices and blotters and find use in SDS-polyacrylic gel electrophoresis as well as for agarose gel electrophoresis, blotting or electroelution of proteins or DNA/RNA from gels.

The devices were designed for use in conjunction with all electrophoresis systems used in the range of under 400 V and 500 mA (electrophoresis), or 200 V and 1000 mA (blotting). Four outputs connected in parallel supply 0 to 400 V and up to 1000 mA with optional constant setting of milliamperes or volts in 1 mA or 1 V steps. The maximum output is 200 W.

The Biometra P25T also provides a timer function which switches off the output voltage after a specified interval. The time interval can be set freely by the user in the range of 1 to 1999 min.

The digital LCD display can be set to display the current, the voltage or the timer time for the Biometra P25T model.

3 Security

For your own safety and to ensure error-free and safe operation of the device, please read this chapter carefully before commissioning.

Observe all safety instructions listed in this user manual and all messages and information displayed on the monitor by the control and analysis software.

3.1 Safety labeling on the device

Warning and mandatory action labels have been attached to the device and must always be observed. Damaged or missing warning and mandatory action labels can cause incorrect actions leading to personal injury or material damage.

- Do not remove the warning and mandatory action signs.
- Replace damaged signs.

The following warning and mandatory action signs are used:

Warning/mandatory sign	Meaning
	General warning sign, observe the operating manual!
	Danger of electric shock!
	The device contains controlled substances. Analytik Jena warrants that these substances will not be released from the device within the next 25 years provided the device is employed as intended.
	Do not dispose of as domestic waste!

3.2 Requirements for the operating personnel

The device must only be operated by qualified specialist personnel instructed in the use of the device. The operating personnel must meet the following requirements:

- Operate the device only after instruction.
- Know and avoid dangers when working with the device.
- Wear personal protective equipment such as protective gloves, lab coat and safety goggles.
- Training by Analytik Jena is recommended.

The operator of the device is responsible for compliance with safety and occupational health regulations. The operator must meet the following requirements:

- Provide information about national regulations on work safety and accident prevention and observe them during operation of the device.
- Instruct the operating personnel in the safe operation of the device. In doing so, also convey the contents of the manuals for the device system.

3.3 Safety instructions for transport and commissioning

Transport

There is a risk of injury when lifting and carrying, especially from unsecured parts.

- Disconnect all cables from the device. Pack the corresponding cables in the transport packaging as well.
- Only transport the device in its original packaging. Insert all transport locks.

Ambient conditions during commissioning

The device is dangerous if it is installed in an unsuitable environment.

- The device must not be installed in an explosive environment.
- Ensure that the main switch of the device is always freely accessible.
- Keep the ventilation slits clear.

Electrical conditions

The device may be dangerous if the conditions for the electrical connection are not met.

- Only use the supplied power cable or a cable of the same size with a protective earth conductor. Do not use an extension in the supply cable.
- Connect the power plug to a proper power outlet to ensure that the device meets protection class I (ground connector). Do not invalidate the protective effect by the use of an extension line which does not have a protective conductor.
- Check the electrical requirements of the device before connecting it to the mains.
- Only connect the device and its system components to the power grid when they are switched off.

3.4 Safety instructions for operation

Electrical hazard

Lethal voltages may occur in the device.

- Before each start-up, make sure that the device and its safety devices are in proper working condition.
- In case of malfunctions of electrical components, switch off the device immediately and disconnect it from the electrical power supply.
- Do not remove or bypass any protective devices such as the housing.
- Prevent liquid from penetrating the device.
- Do not use the device in environments with extreme humidity (>95 %), or in locations in which condensation occurs.

3.5 Safety instructions for maintenance and cleaning

There is a risk of electric shock if contact is made with live components, which may lead to serious injury.

Unauthorized servicing can lead to maladjustment or damage of the device and its system components.

- Work on electrical components inside the device may be carried out by customer service only.
- Only carry out the maintenance actions listed in the operating manual.
- Switch off the device before maintenance and cleaning. Only work on a switched-on device if this is expressly required by the operating manual.
- Use only original spare parts and wear parts. These have been tested and ensure safe operation.
- After maintenance, ensure that all safety devices are fully functional again.

- Clean the device with a damp, non-dripping cloth. Do not use organic solvents, abrasive cleaners or bleach.

3.6 Behavior during emergencies

In an emergency such as a laboratory fire, live devices put rescue personnel at risk.

- If possible, switch off the device and its components at the power switch and disconnect the power cable from the mains socket.

4 Design

Front side of the device

The operation and display elements are located on the front side of the device. The following illustration shows the common elements of the Biometra P25 and Biometra P25T models:

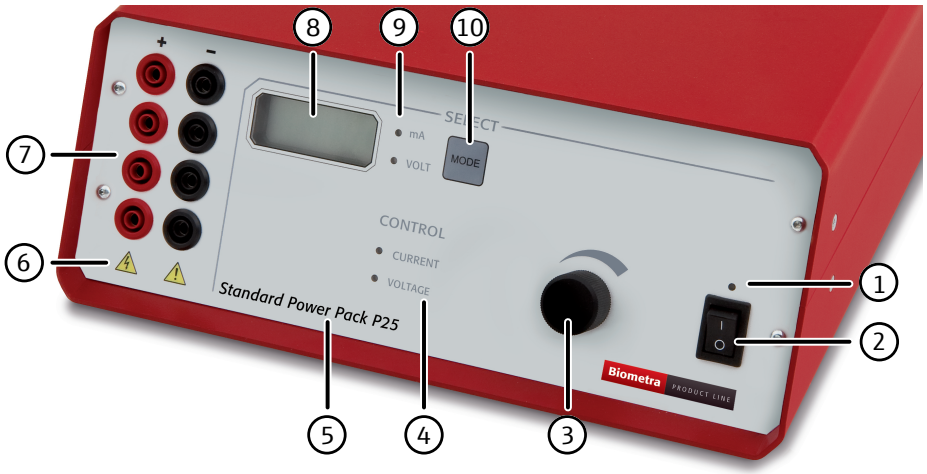


Fig. 1 Common elements of the Biometra P25 and Biometra P25T device models

1 LED for display of On/Off state
2 Mains switch
3 Rotary knob
4 Operating status indicator, LEDs show the constant value maintained by the device (voltage or current)
5 Product description
6 Warning labels: Caution, electricity!
7 Power connections for electrophoresis devices
8 LCD display
9 LEDs show the value currently shown in the display
10 **Select - Mode** key for selecting the value to display (voltage or current)

Biometra P25T

The Biometra P25T device model has a timer option. The following elements are additionally on the front side of the Biometra P25T:

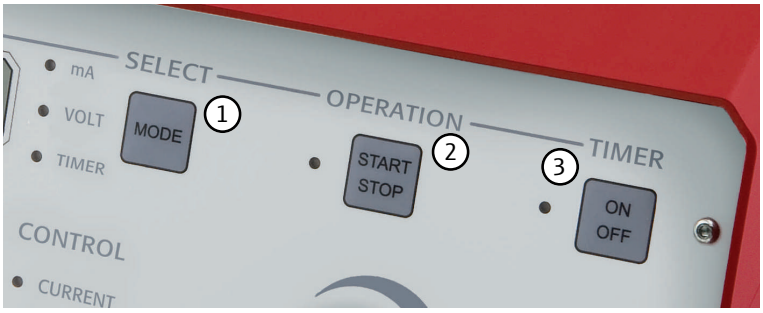


Fig. 2 Additional elements on the front side of the Biometra P25T device model

1 **Select - Mode** key for selecting the value to display (voltage or current)
2 **Operation - Start Stop** key for switching the output voltage on and off
3 **Timer - On Off** for switching between the following modes:
- "Timer operation" (ON, LED lit)
- "Continuous operation" (OFF, LED off)

Rear of the device

The mains connection, fuse box and type plate are located on the rear of the device.

Fig. 3 Rear side of the Biometra P25T model with mains connection, fuse box and type plate (grayed out here)

The type plate contains the following information:

- Manufacturer and address
- Device type and model
- Year of manufacture
- Country of manufacture
- Electrical connection data
- Serial number
- Conformity and test sign
- Disposal instructions (Do not dispose of as domestic waste!)

5 Installation and commissioning

5.1 Installation prerequisites

Climatic conditions

The requirements for the ambient conditions at the installation location are set out in the specifications. If required, ensure that the room is temperature-controlled.

- This laboratory device is designed for indoor use.
- Do not use the device in wet and damp environments. Keep the device surface clean and dry.
- Avoid direct sunlight and radiation from heaters onto the device. If necessary, provide air conditioning.
- Place the device on a heat-resistant and acid-resistant surface.
- Do not locate the device near sources of electromagnetic interference.
- Avoid mechanical shocks and vibrations.
- Do not use the device in explosion-hazard environments.
- Never place an electrophoresis device or blotter on top of the power supply device.
- Only use the device when it has reached the current room temperature. Only this can prevent device damage due to condensate. Reaching room temperature can take several hours.

NOTICE! Condensate can especially occur when the device is moved from cold rooms, e.g., chill rooms to warmer environments for use.

5.2 Spatial requirements

The device requires a space of 26.5 x 25.0 x 9.5 cm (LxWxH).

5.3 Electrical connections

WARNING

Danger due to electrical voltage

- Only connect the device to a properly grounded socket which complies with the voltage indicated on the device's rating plate.
- Do not use an adapter in the feeder.

The device operates on single-phase alternating current.

The installation of the electrical equipment in the laboratory must comply with the DIN VDE 0100 standard. At the connection point, an electrical current in accordance with the standard IEC 60038 must be available.

The device must be connected to a socket with grounding contact!

Also, observe the specifications in the technical data.

5.4 Installation

Proceed as follows for installing the device:

- Remove the device from the transport packaging. Wait until the device has reached the current room temperature before further installation. Only this can prevent device damage due to condensate.

NOTICE! Reaching room temperature can take several hours.

NOTICE! Condensate can especially occur when the device is moved from cold rooms, e.g., chill rooms to warmer environments for use.

- Verify that the delivery is complete. Check all components of the device for transport damage.
  If the delivery is incomplete or in case of a transport damage, contact Analytik Jena.
- Check that the existing mains voltage matches the voltage range specified on the type plate.
- Connect the device to power.
  - ✓ The device is installed. The device can be switched on and setting made before connection of an electrophoresis device.

6 Operation

WARNING

Danger of electrical shock

Do not connect any cables to the device and do not remove any cables while the device is switched on. Switch off the power supply device before connecting or disconnecting an electrophoresis device or blotter.

6.1 Notes on the correlations between current, voltage and power

Keeping the current or voltage constant

When connecting an electrophoresis device to a power supply unit, it is not technically possible to specify both a constant voltage and current value.

You can set **only one** of the two values, current or voltage, as a constant value.

Device connected to the power supply device, e.g., an electrophoresis chamber, present resistance to the output current. The power supply device must put out a specific voltage to allow the output current to flow against this resistance.

Ohm's Law describes the relationship between current [I], voltage [U] and resistance [R] as follows:

The voltage across a resistor is proportional to the current. The ratio of voltage and current is constant to the resistance: U/I = R

The resistance of an electrophoresis chamber can fluctuate over the time of the experiment, however. Reasons for fluctuation are changes to the conditions, for example the buffer conductivity.

If the conditions change in the electrical conductor and thus the resistance, the required voltage for a specific current also changes and vice versa.

If you set one of the values as a constant, the power supply device ensures that the value is kept constant even with fluctuating resistance by adjusting the other value. If, for example, the current is to be constant, only the voltage can adjust. Keeping both values constant is not physically possible.

The following options exist:

- **Constant voltage**: Set the voltage to constant. Set the current to the maximum possible value. The power supply device adjusts the current depending on the current resistance and keeps the voltage constant.
- **Constant current**: Set the current to constant. Set the voltage to the maximum possible value. The power supply device adjusts the voltage depending on the current resistance and keeps the current constant.

Setting the current or voltage to maximum

The electrophoresis device has a maximum power output value.

The power [P] is dependent of the current [I] and the voltage [U]: P = I x U

Simultaneously reaching the maximum current and the maximum voltage is not possible, as this setting would overload the maximum power of the power supply device. This is also not needed for typical applications.

Electrical characteristics of the power supply unit:

Power	Voltage	Current
Max. 200 W	Max. 1000 mA	Max. 400 V (DC)

Possible maximum settings for current and voltage at maximum power:

Setting	Power	Voltage	Current
Maximum voltage	200 W	**400 V**	500 mA
Maximum current	200 W	200 V	**1000 mA**

Connecting several devices to one power supply device

The following applies when connecting several devices to one power supply device:

- Voltage: **The voltage is the same for both connected devices.**
  At a set value of 100 V, for example, 100 V are applied to both devices.
- Current: **The set and displayed current is divided.**
  At a set value of 60 mA, for example, the power supply device displays 60 mA, but each device only receives a portion of this current. In the case of two identical devices with the same load, each device receives 30 mA.

NOTICE! The current is only distributed evenly if the device are identical. To ensure reproducible application conditions, only connecting identical devices with the same load to the power supply device is recommended.

6.2 Biometra P25 model operation sequence

The Biometra P25 model supplies power with the last set values as soon as the main switch is switched on.

Check the set values before connecting an electrophoresis device.

Switch off the device using the main switch before connecting an electrophoresis device. The device saves the last set values.

The operation sequence for the Biometra P25 is:

- Switching on the device using the main switch
- Making settings
- Switching off the device using the main switch
- Connecting an electrophoresis device
- Starting electrophoresis by switching on the main switch

To do this, proceed as follows:

Switching on the device

⇨ The power switch on the front of the device is switched off, the LED is dark.

▸ Connect the device to the power with the power cable.

▸ Switch on the power switch on the front of the device.

✓ The LED above the power switch lights up.

✓ The device is switched on.

Making settings

- Check the settings for voltage and current and correct them as necessary. Observe the information in the corresponding chapter.

Switching off the device

- Switch off the power switch on the front of the device.
  - ✓ The LED above the power switch goes out.
  - ✓ The device is switched off.

Connecting an electrophoresis device

⇨ The power supply device is switched off via the power switch. The LED near the power switch is dark.

- Connect the electrophoresis device. Ensure correct cable connection (red cable in red device socket, black cable in black device socket).
  - ✓ The electrophoresis device is connected. The power supply device can be switched on.

Switching on the device and starting electrophoresis

- Switch on the power switch on the front of the device.
  - ✓ The LED above the power switch lights up. The device is switched on.
  - ✓ Electrophoresis is started.

6.3 Biometra P25T model operation sequence

The Biometra P25T model supplies power with the last set values as soon as the **Operation - Start Stop** key is switched on.

You can also set the values with an electrophoresis device connected, as long as the **Operation - Start Stop** key is switched off.

Only connect the electrophoresis device if the main switch of the power supply device is switched off.

The operation sequence for the Biometra P25T is:

- Switching off the device using the main switch
- Connecting an electrophoresis device
- Switching on the device using the main switch
- Making settings
- Starting electrophoresis via the key **Operation - Start Stop**

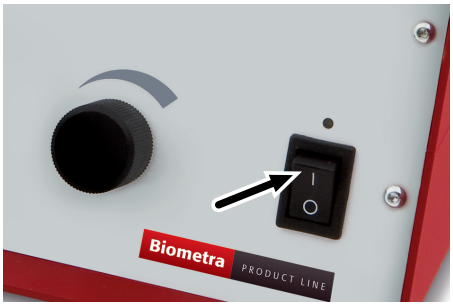
To do this, proceed as follows:

Connecting an electrophoresis device

⇨ The power supply device is switched off via the power switch. The LED near the power switch is dark.

- Connect the electrophoresis device. Ensure correct cable connection (red cable in red device socket, black cable in black device socket).
  - ✓ The electrophoresis device is connected. The power supply device can be switched on.

Switching on the device



⇨ The power switch on the front of the device is switched off, the LED is dark.

- Connect the device to the power with the power cable.
- Switch on the power switch on the front of the device.
  - ✓ The LED above the power switch lights up.
  - ✓ The device is switched on.

Making settings

- Check the settings for voltage and current and correct them as necessary. Observe the information in the corresponding chapter.
- If needed, switch on the timer and make the settings for it. Observe the information in the corresponding chapter.

Starting electrophoresis

- Start electrophoresis by switching on the OPERATION key.
  - ✓ Electrophoresis is started.

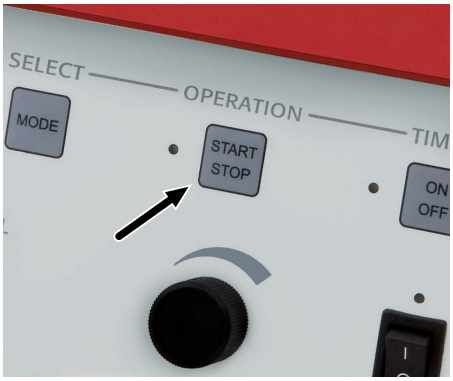
6.4 Setting voltage, current and the timer

6.4.1 Setting current and voltage

Setting the voltage

Biometra P25 model:

- Switch on the main switch.
  - ✓ The voltage is switched on. Electrophoresis is started.



Switching off the voltage

Biometra P25T model:

- Switch on the main switch.
- Switch on the voltage with the **Operation - Start Stop** key (see arrow in illustration).
  - ✓ The LED next to the **Operation - Start Stop** key is lit in green.
  - ✓ The voltage is switched on. Electrophoresis is started.

NOTICE! If timer operation of the device is activated, the timer is started at the same time the voltage is switched on.

Biometra P25 model:

- Switch off the main switch.
  - ✓ The voltage is switched off.

Biometra P25T model:

- Without timer: Press the **Operation - Start Stop** key.
- With timer: After the set time interval has elapsed, the voltage of the device is automatically switched off.
  - ✓ The LED next to the **Operation - Start Stop** key goes out.
  - ✓ The voltage is switched off.

NOTICE! Pressing the "Operation" key does not safely disconnect the device from the power supply. Before connecting or disconnecting Biometra P25 T connections to electrophoresis devices for any reason, the device must always first be switched off via the power switch.

Setting current and voltage

NOTICE! Biometra P25 model: Disconnect the cable connection to connected electrophoresis devices before making settings for current and voltage.

You can set the current and the voltage with the following process:

- Stop the power supply to connected electrophoresis devices:
  - Biometra P25 model: Switch off the device via the main switch and disconnect the cable connections to the electrophoresis devices. After this, switch on the device with the main switch.
  - Biometra P25T model: First switch off the voltage with the **Operation - Start Stop** key. Connected electrophoresis devices can remain connected.
- Press the **Select - Mode** (1) key to switch between **mA** (current) and **Volt** (voltage).
  - ✓ The LCD display (2) switches the displayed current value to the selected unit.
- Turn the rotary knob (3) by one notch.
  - ✓ The LCD display (2) switches from the display of the current value to the display of the target value for the set unit.
  - ✓ The LED of the selected unit flashes. The target value can now be set.

- Set the desired target value for the output current or output voltage:
  - Use the rotary knob (3) to set the target value.
  - By changing the speed the knob is turned, settings can be made in different increments (e.g., when setting the current: Turning the knob slowly changes in 1 mA steps, turning more rapidly changes in 100 mA steps).
  - ✓ The selected value is set to the desired target value.
- Do not use the rotary knob for 3 s.
  - ✓ The LCD display switches back to the display of the current value.
  - ✓ The target value has been set.

NOTICE! The set target value is output the same for all connected electrophoresis devices. Individual control of the individual electrophoresis devices is not possible.

Keeping the current or voltage constant

You can set the current and voltage so that the device keeps the output of one of the units constant.

The LEDs of the operating status indicator, under **Control**, display whether a unit is currently being held constant.

NOTICE! The operating status indicator is not a mode display. It indicates when the device reaches the set upper limit of a value during electrophoresis and now limits the output current so that this value is not exceeded but remains constant. The values must be set correctly for the desired value to be kept constant automatically.

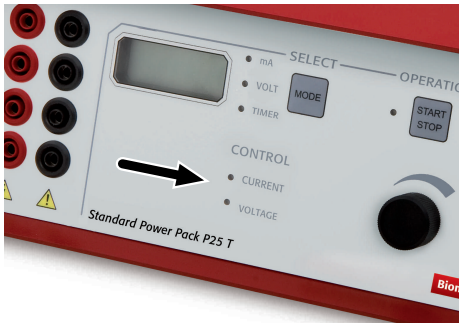


Fig. 4 Operating status indicator

The following table provides the required settings for keeping current or voltage constant:

Special function	Required setting
Constant voltage	Set the desired value for **Voltage**. Set **Current** to the maximum value.
Constant current	Set the desired value for **Current**. Set **Voltage** to the maximum value.

Example:

An agarose gel electrophoresis is to be carried out with a constant voltage of 150 V. The output current must not exceed 300 mA for safety reasons. The following target values are set:

Output voltage: 150 V

Output current: 300 mA

6.4.2 Setting the timer on the Biometra P25T model

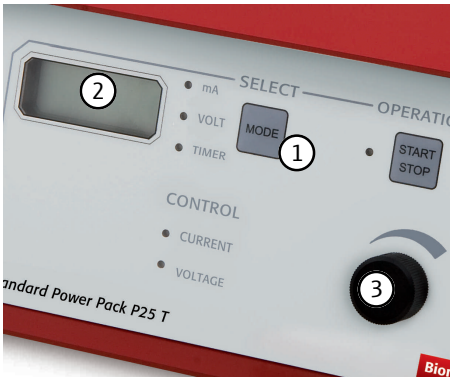
Switching timer operation on and off

You can also operate the Biometra P25T device model with a timer in addition to continuous operation. Timer operation can be switched on and off as follows:

- Press the **Timer - On Off** key.
  - ✓ If the LED next to the key is lit, timer operation is set.
  - ✓ If the LED next to the key is off, the device is in continuous operation.

Setting the timer

You can set the timer duration as follows for the Biometra P25T device model:



- Select **Timer** with the **Select - Mode** key (1).
  - ✓ The LCD display (2) switches to display of the current **Timer** value.

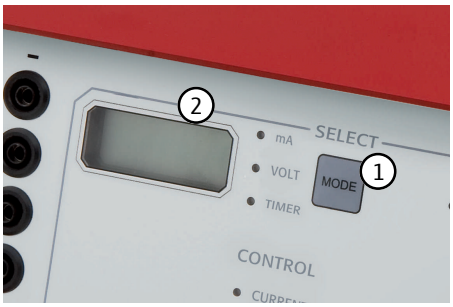
NOTICE! If the timer has elapsed or if the Timer – On Off key was used to switch from timer operation to continuous operation, the LCD display shows a line instead of a value for the current value.

- Turn the rotary knob (3) by one notch.
  - ✓ The LCD display (2) switches from the display of the current value to the display of the target value for the timer.
  - ✓ The LED of the selected unit flashes. The target value can now be set.
- Set the desired time for the timer:
  - Use the rotary knob (3) to set the target value.
  - By changing the speed the knob is turned, settings can be made in different increments (e.g., turning the knob slowly changes in 1 min. steps, turning more rapidly changes in 100 min. steps).
  - ✓ The timer is set to the desired time.
- Do not use the rotary knob for 3 s.
  - ✓ The LCD display switches back to the display of the current value.
  - ✓ The time has been set.

6.4.3 Checking current and voltage

Checking actual values

You can switch between the display of the current value for current and voltage at any time. For the Biometra P25T device type, you can also switch to the display of the remaining timer time.

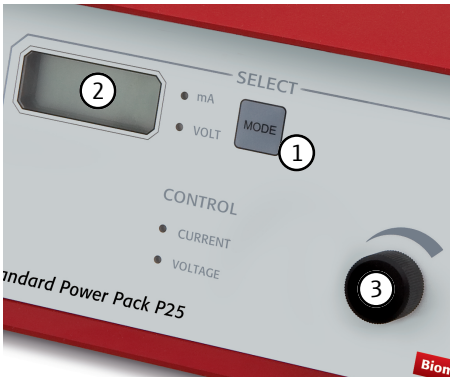


⇨ The LCD display shows the current value for the set unit.

- With the **Select - Mode** key, select **mA** (current), **Volt** (voltage) or **Timer** (time, only forBiometra P25T).
  - ✓ The LCD display switches the displayed current value to the selected unit.

Checking target values

You can check the set target values for current and voltage at any time. Proceed as follows to check:



- With the **Select - Mode** key, select **mA** (current) or **Volt** (voltage).
  - ✓ The LCD display switches the displayed current value to the selected unit.
- Turn the rotary knob by a notch to switch the LCD display from the current value to the target value.
  - ✓ The LCD display switches from the display of the current value to the display of the target value for the set unit.
- To switch back to the current value display: Do not use the rotary knob for 3 s.
  - ✓ The LCD display switches back to the display of the current value.

6.4.4 Power limitation

The output power of the device is limited to max. 200 W. If the maximum permissible output power is exceeded due to the voltage and current set by the user, the device reduces the specified target value for the output current in accordance with the following illustration:

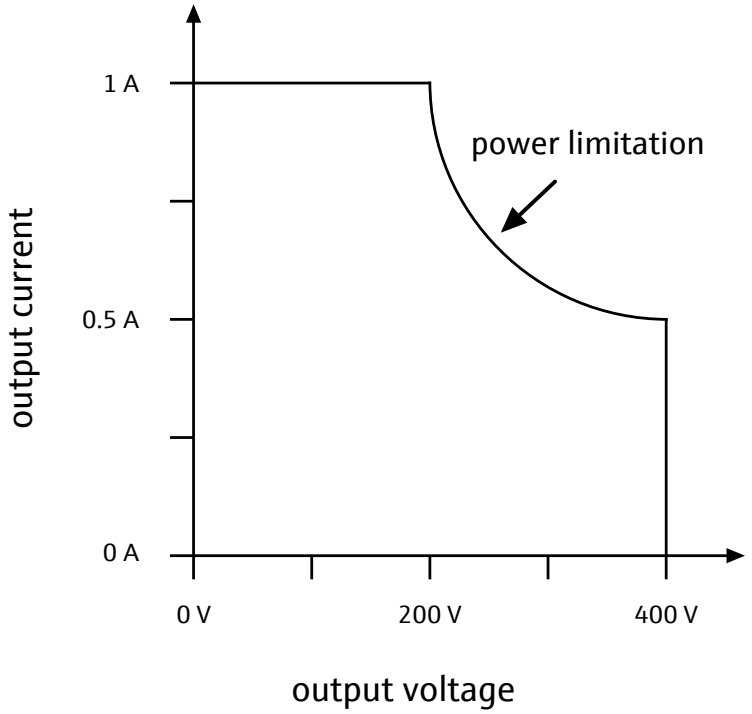


Fig. 5 Automatic power limitation for high output values

When current limitation occurs, both the control LEDs labeled **Current** and **Voltage** light up to indicate that the output current is lower than originally set by the user due to the power limitation.

In addition, observe the information on the operating status display in the "Status messages" chapter.

6.5 Status messages

Power ON LED

Fig. 6 Power ON LED

A green LED is located directly above the power switch. Together with the power switch setting, this indicates whether the device is working properly.

Power switch setting	LED display	Meaning
0	-	Device switched off
1	Green	Device switched on
1	-	**Error**: ■ No power connection ■ Fuse faulty ■ Device errors Observe the measures for eliminating individual error sources further below.

If the Power ON LED remains dark when the power switched is switched on, an operating or hardware error has occurred. Please check all possible sources for the error in this case:

Error source	Remedy
No mains voltage present.	Switch off the device. Check the mains voltage.
Device not correctly connected to power.	Switch off the device. Connect the device to power correctly.
Fuses in the IEC socket defective.	Change the fuse. Observe the instructions in the corresponding chapter for changing. For the correct fuse specifications, observe the information in the technical data. ⚠ CAUTION! Switch off the device via the power switch and disconnect it from power by unplugging the power cable before changing fuses! ⚠ CAUTION! Only use the specified fuses. Using incorrect fuses presents a risk of fire; personal injury and device damage may ensue.

If the specified measures do not lead to success, please contact Analytik Jena Service.

Display

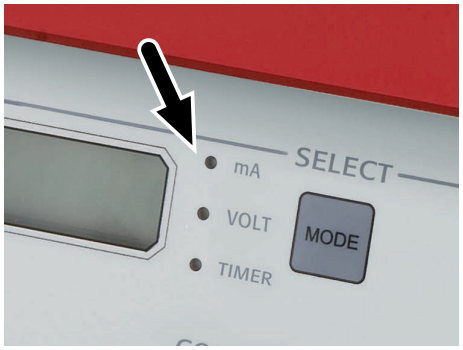


Fig. 7 LEDS next to LCD display

You can select the LCD display to shows the actual and set values for the output voltage, the output current or the timer (Biometra P25T model only) (see chapter "Checking current and voltage"). LEDs are located to the right of the LCD display. These LEDs indicate the unit of the value on the display. The following table explains the various display statuses:

Size	LED	LCD display
mA	Lit continuously	Output current [mA]
	Flashing	Target value for current control [mA]
Volt	Lit continuously	Output voltage [V]
	Flashing	Target value for voltage control [V]
Timer	Lit continuously	Remaining run time [min]
	Flashing	Target value for the time [min]

Status display for Operation - Start Stop and Timer - On Off

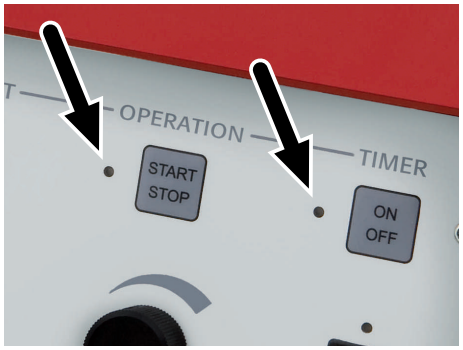


Fig. 8 LEDs of keys Operation - Start Stop and Timer - On Off

Two LEDs located next to the **Operation - Start Stop** and **Timer - On Off** keys indicate whether the timer function is activated and whether the output voltage is switched on or off. The following assignment applies:

Key	LED	LCD display
Operation - Start Stop	LED on	Output voltage switched on
	LED off	Output voltage switched off, no electrophoresis
Timer - On Off	LED on	Timer operation switched on
	LED off	Continuous operation, timer operation switched off

Operating status indicator

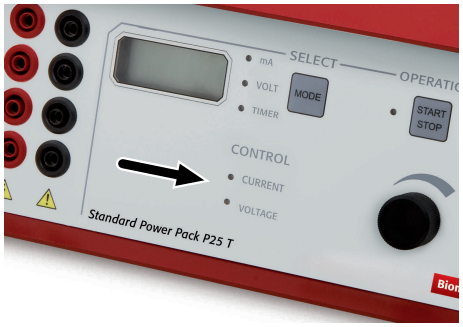


Fig. 9 LEDs for operating status display

You can see whether the device is currently regulating a value by the LEDs of the operating status display.

NOTICE! The operating status display indicates the current operating status, not the mode! The LEDs light up when the device reaches the set maximum limit for a value and then holds this. If the device is not currently at this limit, but is holding steady at a value below this, the LED is also not lit.

The three possible constant values are listed in the table below.

Depending on the selected voltage and current settings and the electrical resistance of the electrophoresis device, the device is in one of the three operating states, "Voltage control", "Current control" or "Power control". The operating status of the device is displayed via the two control LEDs below the display. The following assignment applies:

LED display	Constant value	Explanation
Voltage LED is lit	Voltage control [V]	The output voltage is held at the set value.
Current LED is lit	Current limitation [mA]	If the set current value is exceeded. The output voltage adjusts to the electrical resistance of the electrophoresis device so that the output current is limited to the set target value. The output current is held at the set value.
Current LED is lit **Voltage** LED is lit	Power limitation	If the maximum output power is exceed due to the set voltage and current target values. The device reduces the maximum permissible output current. For the type of limitation and how the current is limited, see the illustration in "Power limitation". The lit LEDs indicate that the actual output current is lower than originally set due to the power limitation.

7 Maintenance and care

7.1 Cleaning

Observed the following information for cleaning the device:

- Switch off the device and disconnect the device from power before cleaning.
- Use a soft cloth to clean. You can also dampen the cloth slightly.
- You can use mild, non-abrasive soap to clean.
- Do not use solvents to clean!
- Do not wet-clean the device!
- Do not immerse the device in water!

7.2 Replacing the fuses

WARNING

Risk of electric shock

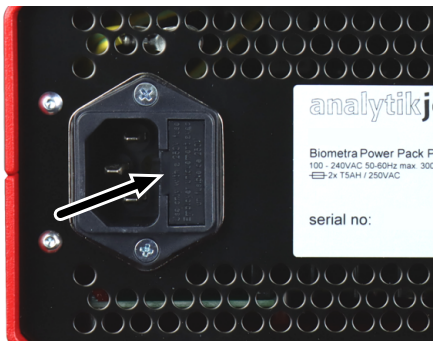
Switch off the device and disconnect the power plug before beginning maintenance work!

NOTICE

Only use the specified fuses. For the correct fuse specifications, observe the information in the technical data.

Proceed as follows to replace the fuses:

- ▸ Switch off the device via the power switch on the rear and disconnect the power plug.



- ▸ Carefully open the fuse box next to the power connection socket. A narrow flat screwdriver can be used for opening.
- ▸ Remove the defective fuses.
- ▸ Insert new fuses.

NOTICE! The new fuses must be in accordance with the specifications in the technical data.

- ▸ Close the fuse box.
  - ✓ The fuse is replaced. The device can be reconnected to power and switched on.

8 Transport and storage

8.1 Transport

NOTICE

Risk of device damage due to unsuitable packaging material

- Only transport the device and its components in the original packaging.
- Before transport, remove all loose device parts and apply all transport locks.

Observe the safety information on transporting the device. Avoid the following during transport:

- Impact and vibration
  Risk of damage due to shock, impact or vibration!
- Large temperature fluctuations
  Risk of condensation!

8.2 Storage

NOTICE

Environmental influences and condensate formation can destroy individual components of the device!

- Observe the technical specifications for storage requirements.
- The atmosphere must be low in dust and free from aggressive vapors.

If the device is not installed immediately after delivery or not required for prolonged periods, it should be stored in its original packaging.

Climate conditions

Refer to the technical specifications for the climate requirements of the device's storage location.

8.3 Returning the product

NOTICE

Risk of device damage due to unsuitable packaging material

- Only transport the device and its components in the original packaging.
- Before transport, remove all loose device parts and apply all transport locks.

- ▶ Clean all device components from biologically hazardous, chemical, and radioactive contamination.
- ▶ When registering the return, you will receive a decontamination declaration from customer service. Complete the declaration and attach the signed decontamination declaration to the outside of the shipment.

- Only use the original packaging for the shipment and insert the transport lock. If the original packaging is no longer available, please contact Analytik Jena or your local distributor.
- Attach the following warning label to the packaging:
  "**CAUTION! SENSITIVE ELECTRONIC DEVICE!**".
- Enclose a sheet with the following data:
  - Name and address of the sender
  - Name and telephone number of a contact for inquiries
  - A detailed description of the fault, the precise conditions and situations under which the fault occurs

9 Disposal

At the end of its service life, the device and its electronic components must be disposed of as electronic waste in accordance with the applicable regulations.

10 Specifications

10.1 Technical data

Dimensions	26.5 x 25.0 x 9.5 cm
Weight	3 kg
Parameter output	Const. volt or const. milliampere
Max. voltage	400 V (DC)
Max. current ■ Range: 0 – 200 V ■ Range: 200 – 400 V	 1000 mA < 1000 mA
Max. power	200 W (continuous)
Timer (Biometra P25T only)	1 to 1999 min
Display	LCD display, 3.5 digits, switches between mA and V display, resolution 1 mA or 1 V
Accuracy	■ ± 5 % of the measured value for U ≥ 0.05 * Umax and I ≥ 0.05 * Imax ■ ± 5 % of 0.05 * Umax, Imax for U < 0.05 * Umax and I < 0.05 * Imax (Arithmetic mean value over 3 s, T_{AB} = 0.4 s)
Outputs	4 outputs connected in parallel (4 mm safety sockets)
Supply voltage	100 to 240 V (AC) / 50 to 60 Hz (permissible deviation: -10 to + 6 %)
Max. power	300 W
Fuses	2x 5 A; 250 V

10.2 Ambient conditions

Work environment	Only designed for indoor use.
Ambient temperature	0 to 40 °C
Humidity	≤ 70 %
Max. operating altitude	2000 m above sea level

10.3 Standards and directives

Protection class and protection type	The device is protection class I. The housing is protection type IP 20.
Device safety	The device complies with the following safety standards ■ EN 61010-1 ■ EN 61010-2-010
EMC compatibility	The device has been checked for transient emissions and noise immunity. It meets the requirements for transient emissions according to ■ EN IEC 61326-1 (EN 55011 group 1, class B) The device meets the requirements for noise immunity according to ■ EN IEC 61326-1 (EN 55011 Group 1, Class A)
Guidelines for China	The device contains substances subject to regulation (according to the directive GB/T 26572-2011). Analytik Jena guarantees that, if the device is used as intended, these substances will not leak within the next 25 years and therefore will not pose a threat to the environment or health within this time period.
EU directives	The device meets the requirements of the directive 2011/65/EU. The device is designed and tested in accordance with standards meeting the requirements of EU directives 2014/35/EU and 2014/30/EU. The device leaves the factory in a sound condition with regard to technical safety. To maintain this condition and to ensure safe operation, the user must strictly observe the safety and operating instructions contained in this operating manual. For accessories delivered with the device and system components from other manufacturers, the information provided in their respective operating manuals has priority.

11 Revision overview

version	Effective date	Changes
A	10/2023	First version
B	01/2024	Revision of the standards and directives

List of figures