805 Dosimat

Manual

8.805.8001EN / v6 / 2025-05-16

Metrohm

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Technical Communication
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This documentation is an original document.

This documentation has been prepared with great care. However, errors can never be entirely ruled out. Please send comments regarding possible errors to the address above.

Disclaimer

Deficiencies arising from circumstances that are not the responsibility of Metrohm, such as improper storage or improper use, etc., are expressly excluded from the warranty. Unauthorized modifications to the product (e.g., conversions or attachments) exclude any liability on the part of the manufacturer for resulting damage and its consequences. Instructions and notes in the Metrohm product documentation must be strictly followed. Otherwise, Metrohm's liability is excluded.

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1 Overview

1.1 Product description

The 805 Dosimat is a versatile dosing drive which can be used with a number of different Metrohm devices (e.g., Titrando or sample changer). The 805 Dosimat and the corresponding 806 Exchange Unit are suitable for simply dosing auxiliary solutions and also for titrations.

The 805 Dosimat can be used together flexibly with the 806 Exchange Unit with cylinder sizes of 1 mL, 5 mL, 10 mL, 20 mL or 50 mL. Older piston burets of the 806 Exchange Unit type (without memory chip) can also be used.

The 806 Exchange Unit can be attached onto the Dosimat and also removed again in one easy manual step.

1.2 Displaying accessories

Up-to-date information on the scope of delivery and on optional accessories can be found on the Metrohm website.

1 Searching for a product on the website

- Go to *https://www.metrohm.com*.
- Click on 🔍.
- Enter the article number of the product (e.g. **2.1001.0010**) into the search field and press **[Enter]**.

The search result is displayed.

2 Displaying product information

- To display the products matching the search term, click on **Product models**.
- Click on the desired product.

Detailed information regarding the product is displayed.

3 Displaying accessories and downloading the accessories list

- To display the accessories, scroll down to **Accessories and more**.
  - The **scope of delivery** is displayed.
  - Click on **[Optional parts]** for the optional accessories.

- To download the accessories list, click on **[Download accessories PDF]** under **Accessories and more**.

NOTE

Metrohm recommends keeping the accessories list for reference purposes.

1.3 Symbols and conventions

The following symbols and formatting may appear in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the device part in the figure.
1	**Instruction step** Perform the steps one after the other.
Method	**Dialog text**, **parameter** in the software
File ▶ New	Menu or menu item
[Continue]	**Button** or **key**
	**WARNING** This symbol draws attention to a possible life-threatening hazard or risk of injury.
	**WARNING** This symbol draws attention to a possible hazard due to electrical current.
	**WARNING** This symbol draws attention to a possible hazard due to heat or hot instrument parts.
	**WARNING** This symbol draws attention to a possible biological hazard.
	**WARNING** Warning of optical radiation

	**CAUTION** This symbol draws attention to possible damage to devices or device parts.
	**NOTICE** This symbol highlights additional information and tips.

2 Safety

2.1 Intended use

Metrohm products are used for the analysis and handling of chemicals.

Usage therefore requires the user to have basic knowledge and experience in handling chemicals. Knowledge regarding the application of fire prevention measures prescribed for laboratories is also mandatory.

Adherence to this technical documentation and compliance with the maintenance specifications make up an important part of intended use.

Any utilization in excess of, or deviating from, the intended use is regarded as misuse.

Specifications regarding the operating values and limit values of individual products are contained in the "Technical specifications" section, if relevant.

Exceeding and/or not observing the mentioned limit values during operation puts people and components at risk. The manufacturer assumes no liability for damage due to non-observance of these limit values.

The declaration of conformity loses its validity as soon as modifications are carried out on the products and/or the components.

2.2 Responsibility of the operator

The operator must ensure that basic regulations on occupational safety and accident prevention in chemical laboratories are observed. The operator has the following responsibilities:

- Instruct personnel in the safe handling of the product.
- Train personnel in the use of the product according to the user documentation (e.g. install, operate, clean, eliminate faults).
- Train staff on basic occupational safety and accident prevention regulations.
- Provide personal protective equipment (e.g. protective glasses, gloves).
- Provide suitable tools and equipment to carry out the work safely.

The product may be used only when it is in perfect condition. The following measures are required to ensure the safe operation of the product:

- Check the condition of the product before use.
- Remedy defects and malfunctions immediately.
- Maintain and clean the product regularly.

2.3 Requirements for operating personnel

Only qualified personnel may operate the product. Qualified personnel are persons who meet the following requirements:

- Basic regulations on occupational safety and accident prevention for chemical laboratories are known and complied with.
- Knowledge of handling hazardous chemicals is present. Personnel have the ability to recognize and avoid potential dangers.
- Knowledge of how to apply fire prevention measures for laboratories is available.
- Safety-relevant information is communicated and understood. The personnel can operate the product safely.
- The user documentation has been read and understood. The personnel operate the product according to the instructions in the user documentation.

2.4 Safety instructions

2.4.1 General notes on safety

WARNING

Operate this device only according to the information contained in this documentation.

This device left the factory in a flawless state in terms of technical safety. The following instructions must be observed carefully to preserve this status and ensure non-hazardous operation of the device.

2.4.2 Electrical safety

Electrical safety when working with the device is ensured as part of the international standard IEC 61010.

WARNING

Only personnel qualified by Metrohm are authorized to carry out service work on electronic components.

WARNING

Never open the housing of the device. The device could become damaged. There is a considerable risk of injury if live components are touched.

There are no parts inside the housing which can be serviced or replaced by the user.

Supply voltage

WARNING

An incorrect supply voltage can damage the device.

Operate this device only with a supply voltage specified for it (refer to the rear of the device).

Protection against electrostatic charges

WARNING

Electronic components are sensitive to electrostatic charges and can be destroyed by discharges.

Do not fail to pull the power cord out of the power socket before setting up or disconnecting electrical plug connections at the rear of the device.

The device is to be operated only with the door closed.

2.4.3 Handling liquids

CAUTION

Periodically check all system connections for leaks. Observe the corresponding regulations that concern handling flammable and/or toxic liquids and their disposal.

2.4.4 Flammable solvents and chemicals

WARNING

All relevant safety measures are to be observed when working with flammable solvents and chemicals.

- Set up the device in a well-ventilated location (e.g., fume cupboard).
- Keep all sources of ignition far from the workplace.
- Clean up spilled liquids and solids immediately.
- Follow the safety instructions of the chemical manufacturer.

3 Overview of the device

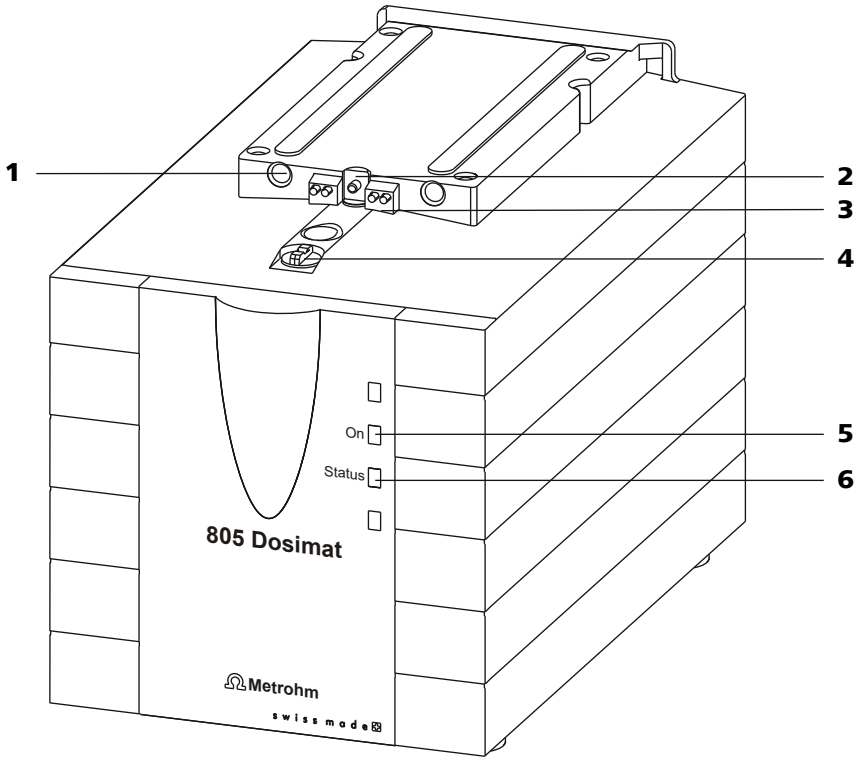


Figure 1 Front 805 Dosimat

1 **Guide openings** For centering the 806 Exchange Unit.	**2** **Push rod** Moves the piston of the 806 Exchange Unit up and down.
3 **Contact pins** For the memory chip of the 806 Exchange Unit.	**4** **Coupling** For flat stopcock switching.
5 **"On" LED** Lights up as soon as the 805 Dosimat is connected to an MSB connector of a control device and the control device is switched on.	**6** **"Status" LED** Shows the current status of the internal dosing drive.

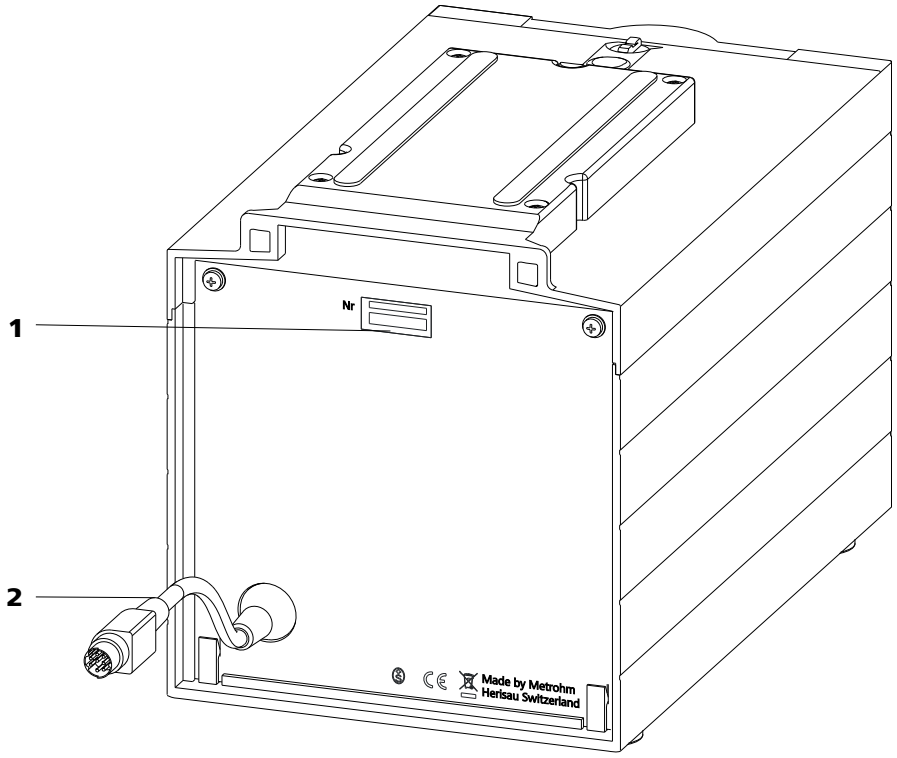


Figure 2 Rear of 805 Dosimat

1	**Type label** Contains specifications concerning supply voltage, device type and serial number.
2	**Connection cable** For connecting to an MSB connector of a control device.

4 Installation

4.1 Setting up the device

4.1.1 Packaging

The product and accessories are supplied in protective special packaging. Keep this packaging to ensure safe transportation of the product. If a transport lock is present, keep this as well for future reuse.

4.1.2 Checks

Inspect the delivery immediately upon receipt:

- Check the delivery against the delivery note to ensure completeness.
- Check the product for damage.
- If the delivery is incomplete or damaged, contact your regional Metrohm representative.

4.1.3 Location

The instrument has been developed for operation indoors and may not be used in explosive environments.

Place the instrument in a location of the laboratory which is suitable for operation and free of vibrations and which provides protection against corrosive atmosphere and contamination by chemicals.

The instrument should be protected against excessive temperature fluctuations and direct sunlight.

4.2 Connecting the 805 Dosimat

NOTE

In the case of a Titrando with 806 Exchange Unit, the MSB port 1 is used by the internal drive and is not available for a 805 Dosimat.

The 805 Dosimat is controlled by devices which are equipped with a 'Metrohm Serial Bus' (MSB). These are, e.g., Titrandos or sample changers. The 805 Dosimat can be connected on the rear of the corresponding device to one of the connectors **MSB 1/2** to **MSB 4**. The 805 Dosimat cannot be connected to devices which do not support tandem dosing.

WARNING

Connect the 805 Dosimat only to a control device that has been switched off. The control device will be able to recognize the 805 Dosimat only during the switch-on sequence.

Observe the alignment of the connection socket. Do not insert the connection cable with too much force, as this may damage the instrument electronics.

5 Working with the 806 Exchange Unit

The 806 Exchange Unit has an integrated memory chip that stores data about the 806 Exchange Unit and the reagent. The data is edited in the Touch Control or in the computer software. The start-up of the 806 Exchange Unit is described in the manual for the 806 Exchange Unit.

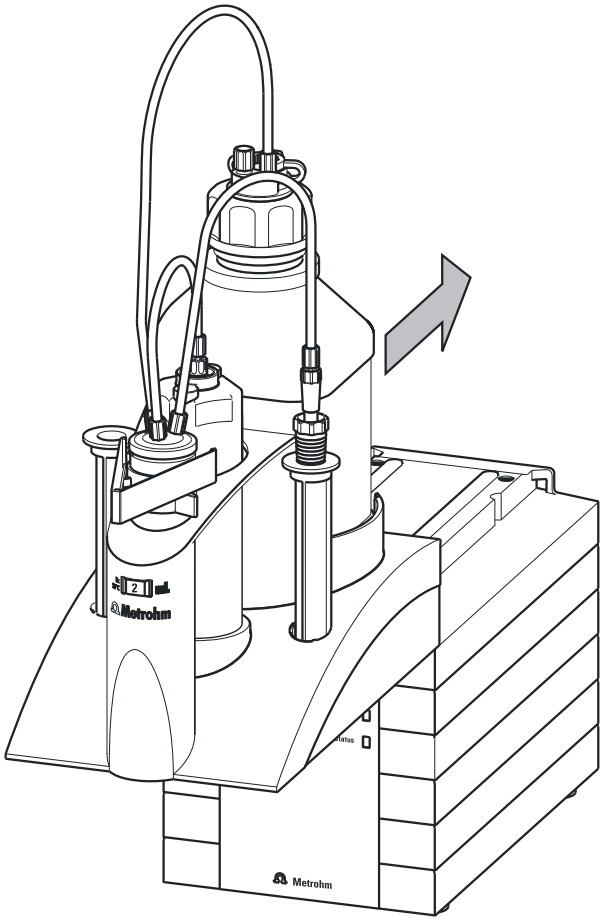


Figure 3 Attaching the 806 Exchange Unit

1 Attach the 806 Exchange Unit from the front onto the 805 Dosimat and push it all the way to the rear.

The 806 Exchange Unit must snap in audibly.

The initialization of the 806 Exchange Unit is triggered as soon as the 806 Exchange Unit has been attached correctly. The 806 Exchange Unit is recognized and the data is read out automatically from the memory chip. The 805 Dosimat carries out an automatic rotation of the stopcock and then returns the flat stopcock to the exchange

position (dosing position). The **Status** LED will be continuously illuminated once this has been accomplished.

The following table contains a summary of which operating statuses of the dosing drive are displayed by the **Status** LED:

Status of the "Status" LED	Description
off	No 806 Exchange Unit is attached.
continuous illumination	The 806 Exchange Unit has been correctly attached and recognized and can now be used for dosing and titration. The flat stopcock is in the exchange position, i.e., the 806 Exchange Unit can be removed.
slow flashing	▪ The 806 Exchange Unit is currently being used for dosing or filling. ▪ An intelligent 806 Exchange Unit has been attached. The data on the integrated memory chip is currently either being read out or written.
rapid flashing	Error on the dosing drive, consult the "Troubleshooting" chapter.

6 Operation and maintenance

6.1 General notes

6.1.1 Care

The 805 Dosimat requires no special care. Nevertheless, the 805 Dosimat must not be exposed to any excessive contamination nor to any corrosive influences. This could result in functional disruptions and a reduction in the service life of the mechanical and electronic components.

Metrohm recommends monthly inspections in the event that alkaline, corrosive or high-concentration reagents are used. If non-problematic reagents are used, then the inspection intervals can be extended to between 6 and 12 months.

Spilled chemicals and solvents must be removed immediately. Above all, the plug connection on the rear of the device should be protected against contamination.

CAUTION

To prevent serious damage to the instrument electronics, the power plug of the control device should be unplugged immediately in the event of aggressive media seepage into the interior of the device. In such cases, inform the regional Metrohm service representative.

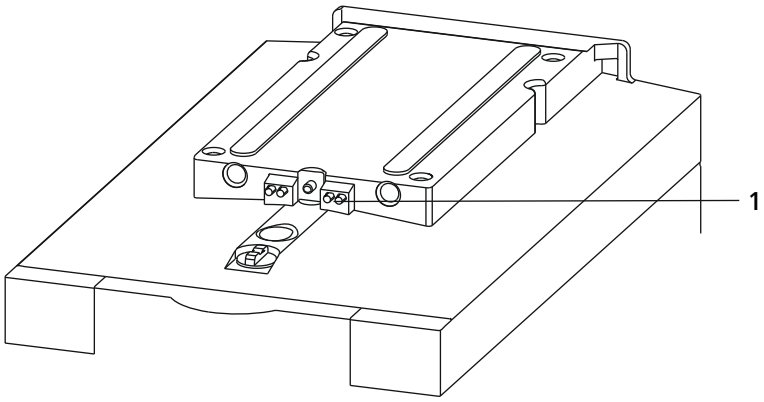


Figure 4 Contact pins for 806 Exchange Unit

1 Contact pins
For data exchange with 806 Exchange Unit.

The contact pins for data exchange with the memory chip are made of titanium and are exceptionally resistant to both chemicals and abrasion.

CAUTION

The contact pins must not become contaminated. Wipe off any contaminations at once.

In the event of more serious contamination, use a moist cloth with ethanol.

6.1.2 Maintenance by the regional Metrohm service representative

Maintenance of the 805 Dosimat is best carried out as part of an annual service, which is performed by specialist personnel of the Metrohm company. A shorter maintenance interval may be necessary if you frequently work with caustic or corrosive chemicals.

The regional Metrohm service representative offers every form of technical advice for maintenance and service of all Metrohm devices.

6.2 GLP - Validation

Every 805 Dosimat and every 806 Exchange Unit manufactured by Metrohm is subjected to rigorous quality controls prior to shipment. Every 806 Exchange Unit is issued a quality certificate attesting conformance with the strict quality criteria of Metrohm. **GLP** (**G**ood **L**aboratory **P**ractice) requires, among other things, periodic inspection of analytical measuring instruments with respect to precision and correctness on the basis of standard operating procedures (**S**tandard **O**perating **P**rocedure, **SOP**). This may also include a check of dosing accuracy.

The regional Metrohm service representatives worldwide offer the possibility of on-site inspections and certifications of devices of the 805 Dosimat type and piston burets of the 806 Exchange Unit type with respect to accuracy.. Metrohm recommends an accuracy inspection whenever a cylinder and/or a piston of an 806 Exchange Unit has been replaced.

Piston burets of the 806 Exchange Unit type with glass cylinders can be inspected according to the standard **Piston-operated volumetric apparatus - Part 3: Burets (ISO 8655-3:2022)**.

7 Troubleshooting

7.1 Problems

Problem	Cause	Remedy
806 Exchange Unit recognized either not at all or incorrectly	*The 806 Exchange Unit has not been attached correctly.*	▪ Remove the 806 Exchange Unit and reattach it. ▪ Check the correct placement of the 806 Exchange Unit. ▪ Check the position of the piston and the stopcock. ▪ Switch the device off and then back on again. ▪ Contact the regional Metrohm service representative.
Data of the 806 Exchange Unit cannot be read.	*The memory chip is mechanically damaged or impaired by chemicals.*	▪ Remove the 806 Exchange Unit and reattach it. ▪ Have the memory chip replaced by the regional Metrohm service representative.
Dosimat cannot be actuated by the control device.	*The connection between Dosimat and control device is interrupted or an error has occurred on the Dosimat.*	▪ Check the cable connections. ▪ Switch the device off and then back on again. ▪ Check the dosing time and the filling time. ▪ Contact the regional Metrohm service representative.
No dosing takes place at all.	*The tubing connections are jammed or the 806 Exchange Unit is not assembled correctly.*	▪ Check whether the tubings are correctly connected. ▪ Check whether the dosing tip is blocked. ▪ Check whether the filling tubing is blocked. ▪ Check whether all of the openings of the bottle cap have accidentally been closed (vacuum in the supply bottle!). One of the openings must be open as pressure equalization or has to be equipped with an (open) adsorber tube. ▪ Remove the 806 Exchange Unit and check whether the piston is connected to the push rod of the drive.

Problem	Cause	Remedy
The 806 Exchange Unit cannot be attached to the 805 Dosimat.	*The piston is misaligned.*	Carefully pull out or push in the piston with the wrench (6.2739.010) until the recess of the piston rod is flush with the base of the 806 Exchange Unit.
	The push rod of the drive is misaligned.	Switch the device off and then back on again.
The 806 Exchange Unit cannot be removed from the Dosimat.	*The piston and/or the stopcock are not in filling position.*	▪ Carry out the **[Filling]** function on the control device. Check the cable connections to the control device. ▪ Switch the device off and then back on again.
The entire system is blocked.	*The Dosimat or the control device are in an exceptional error state.*	▪ Check the cable connections. ▪ Switch the device off and then back on again.
The flat stopcock is blocked.	*The stopcock is contaminated, corroded or worn out.*	▪ Carefully loosen the stopcock out of its holder. Switch the control device off and then back on again. ▪ Put the stopcock into water with a small amount of dishwashing detergent or into ethanol, and if necessary clean it with ultrasound. Rinse it thoroughly and place it again into the stopcock holder. ▪ Replace the defective stopcock.
The 806 Exchange Unit cannot be attached.	*The stopcock of the 806 Exchange Unit is not in the exchange position.*	Switch the flat stopcock manually to the exchange position (switching lever directed to the right).
	The piston rod in the 806 Exchange Unit is not in the correct position.	Move the piston rod to the correct position (see *806 Exchange Unit manual*).
The 806 Exchange Unit cannot be removed and the "Status" LED flashes slowly.	*It is being dosed or filled and/or the Dosimat is not in the exchange position.*	Stop the run or carry out the "Filling" function.
Die "Status" LED does not light up, even though an 806 Exchange Unit is attached.	*The 806 Exchange Unit has not been attached correctly.*	Remove the 806 Exchange Unit and reattach it until it snaps in place. The LED flashes while data is read out from an intelligent 806 Exchange Unit. The LED lights up continuously

Problem	Cause	Remedy
		as soon as the 806 Exchange Unit has been recognized correctly.
The "Status" LED flashes rapidly.	*The dosing drive is overloaded because the stopcock is jammed.*	Switch off the control device. Check whether the 806 Exchange Unit can be removed. If the 806 Exchange Unit cannot be removed, then check whether the stopcock can be rotated. Move the stopcock to the exchange position by rotating the stopcock to the right (see *806 Exchange Unit manual*). Remove the 806 Exchange Unit.
	The dosing drive is overloaded because the piston is jammed.	Switch the control device off and then back on again. The dosing device is being initialized during switching on. Remove the 806 Exchange Unit and clean it (see *806 Exchange Unit manual*). If the 806 Exchange Unit cannot be removed, then contact the regional Metrohm service representative.
	The data of the 806 Exchange Unit cannot be read because the memory chip has been damaged mechanically or by chemicals.	Have the memory chip replaced by the regional Metrohm service representative. Until the memory chip is being replaced you can remove the memory chip yourself in order to be able to still use the 806 Exchange Unit. The cylinder volume is automatically recognized nevertheless, but no data can be read from the 806 Exchange Unit nor be saved on the memory chip anymore.

8 Appendix

8.1 Memory chip

The 806 Exchange Unit is equipped with a memory chip which contains the specifications for the 806 Exchange Unit, the tubing connections, and the reagent used.

Specifications for the 806 Exchange Unit and the tubing connections

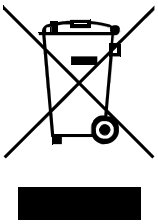
- Order number of the 806 Exchange Unit
- Serial number of the 806 Exchange Unit
- Serial number of the cylinder
- Tubing length and tubing diameter at the ports
- Validation date

Indications on the reagent

- Name of the reagent
- Titer of the reagent
- Concentration of the reagent
- Manufacturing date and expiry date of the reagent

The 805 Dosimat makes it possible to read and overwrite data with the aid of a suitable device (e.g., Titrando or sample changer). Whether the Metrohm device is suitable can be found in the respective manual.

9 Recycling and disposal



Properly dispose of chemicals and of the product to reduce negative effects on the environment and public health. Local authorities, waste disposal companies or dealers provide more detailed information on disposal. Observe the WEEE EU directive (WEEE = Waste Electrical and Electronic Equipment) for the proper disposal of waste electronic equipment within the European Union.

10 Technical specifications

10.1 Dosing drive

Cylinder volume of the 806 Exchange Unit	1 mL, 5 mL, 10 mL, 20 mL or 50 mL
Resolution	20,000 steps per cylinder volume
Dosing time/filling time	18 seconds each for the cylinder volume

10.2 Energy supply

from control device	±12 V, 5 V, 6 W
Dosing device connector	Mini DIN plug, 8-pin, (MSB)

10.3 Ambient temperature

Nominal function range	+5 °C to +45 °C (at max. 85% humidity, non-condensing)
Storage	–20 to +60 °C
Transport	–40 to +60 °C

10.4 Dimensions

Width	142 mm
Height	164 mm approx. 450 mm (with 806 Exchange Unit)
Depth	231 mm
Weight	2,550 g (without 806 Exchange Unit)
Material (housing)	PBT (poly(butylene terephthalate))

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