803 Ti Stand

Manual

8.803.8001EN / v3 / 2025-12-09

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Technical Communication
Metrohm AG
CH-9100 Herisau

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 Introduction

1.1 Instrument description

The 803 Ti Stand with a magnetic stirrer and a built-in pump is part of the Titrando system. It is mainly used for volumetric Karl Fischer titration together with a Titrando.

The titration stand is directly connected to the Titrando via an MSB connection cable.

With the integrated membrane pump, it is possible to aspirate the titrated solution and to add new solvent without having to open the titration cell.

1.2 About the documentation

CAUTION

Please read through this documentation carefully before putting the device into operation. The documentation contains information and warnings which the user must follow in order to ensure safe operation of the device.

1.2.1 Symbols and conventions

The following symbols and styles are used in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the instrument part in the figure.
1	**Instruction step** Carry out these steps in the sequence shown.
	**Warning** This symbol draws attention to a possible life 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.
	**Caution** This symbol draws attention to a possible damage of instruments or instrument parts.
	**Note** This symbol marks additional information and tips.

2 Safety

2.1 Safety instructions

2.1.1 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.

2.1.2 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.

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.

2.1.3 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.

2.1.4 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 instrument

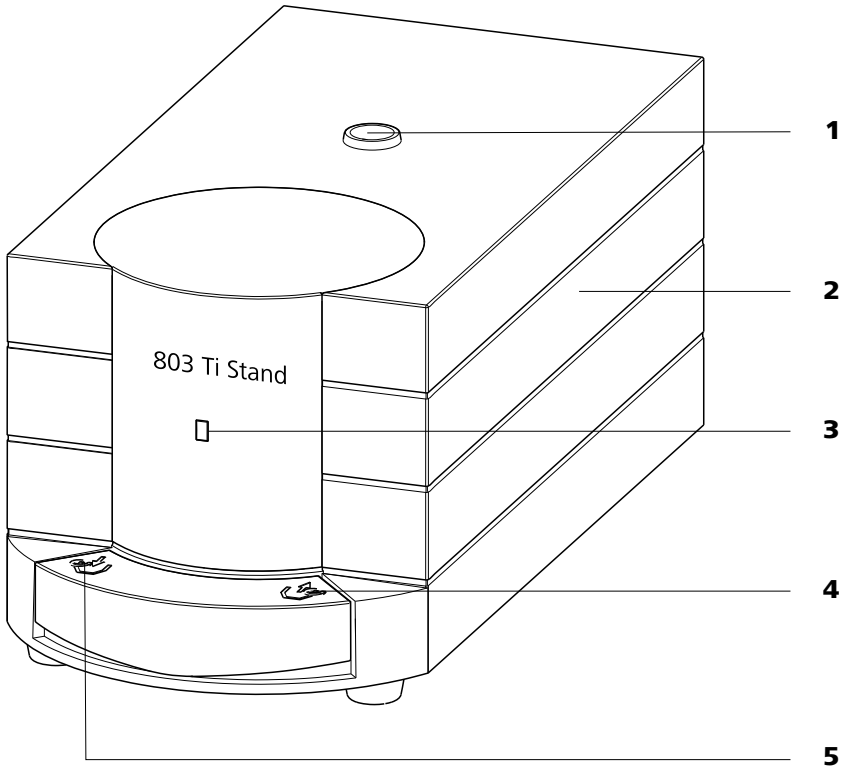


Figure 1 Front 803 Ti Stand

1 Bore hole
For support rod (6.2016.070), diameter 10 mm, length 40 mm

2 Housing
With built-in pump and magnetic stirrer

3 LED function display
Lights up, when the stirrer is switched on.

4 Key
Pressing the key aspirates air out of the aspiration bottle. The vacuum in the suction bottle suctions the liquid out of the KF titration cell and into the suction bottle.

5 Key
Pressing the key pumps air into the solvent bottle. The overpressure in the solvent bottle pushes solvent into the KF titration cell.

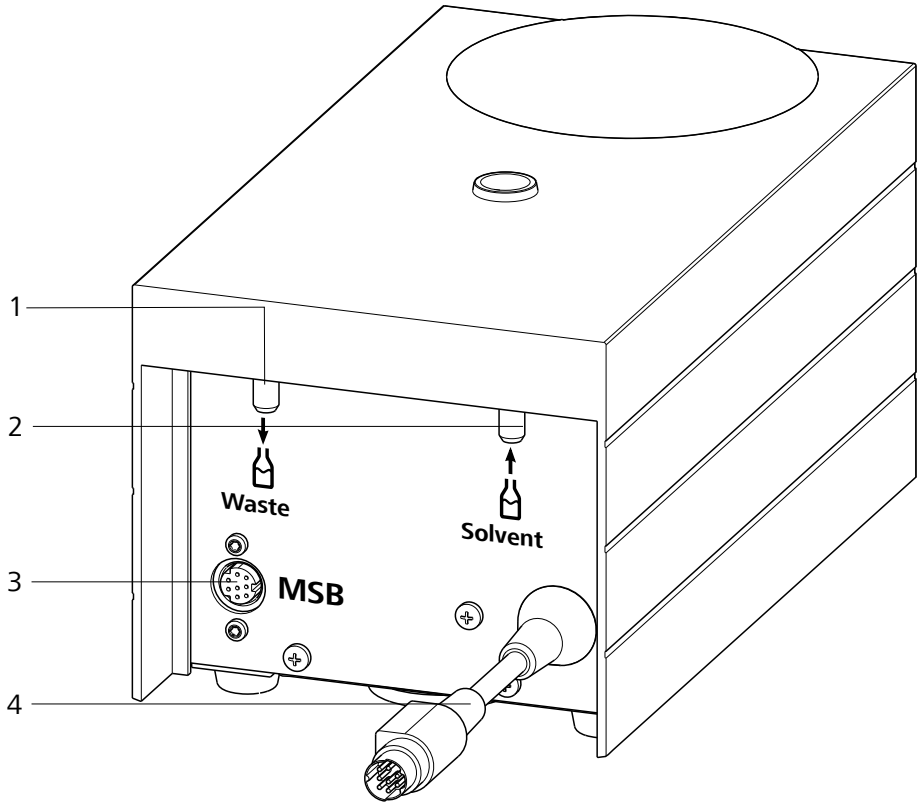


Figure 2 Rear 803 Ti Stand

1 **Connection nipple for PVC tubing** For aspirating the titration vessel content.	**2** **Connection nipple for PVC tubing** For aspirating solvent.
3 **MSB connector** For connecting additional devices (e.g. Dosino)	**4** **MSB connection cable** For connecting to an analysis 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.

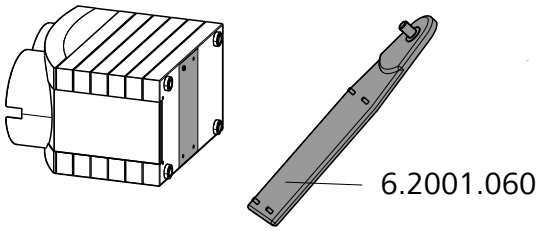
Place the instrument in a location of the laboratory which is suitable for operation and free of vibrations and which provides protection against corrosive atmosphere and contamination by chemicals.

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

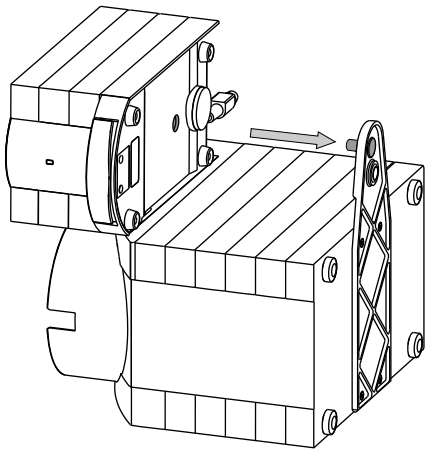
4.2 Mounting the 803 Ti Stand

Mounting the KF titration stand as follows:

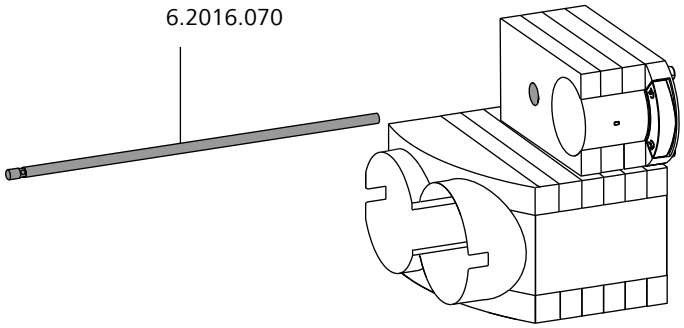
1 Screw the 6.2001.060 stand plate with the accompanying four screws tightly to the bottom of the instrument.



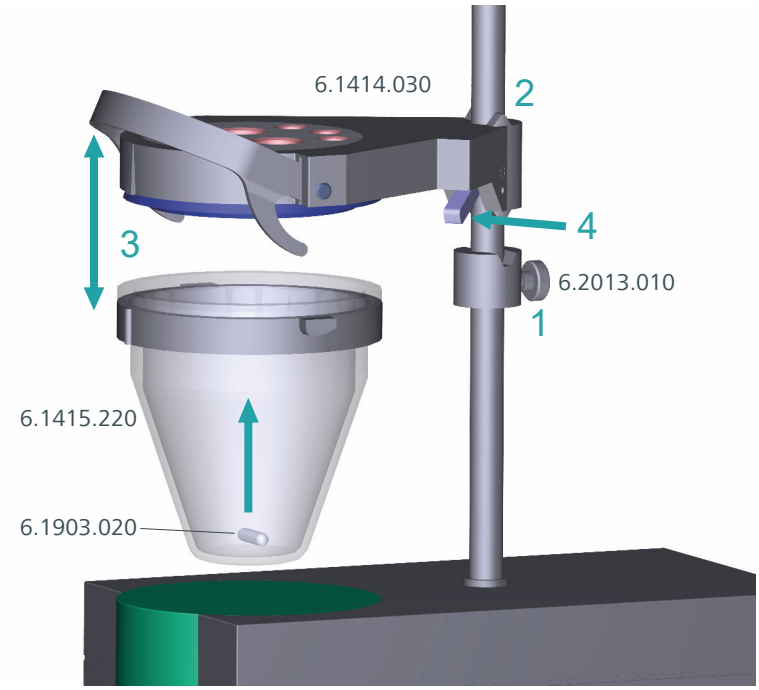
2 Attach the opening on the bottom of the KF titration stand onto the hex screw in the stand plate.



3 Slide the 6.2016.070 support rod from above into the opening of the KF titration stand intended for this purpose up to the hex screw and tighten.



Mounting the KF titration cell

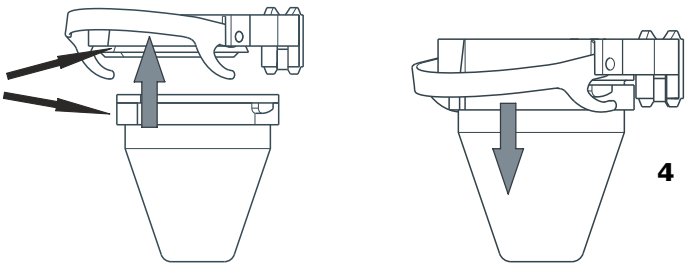


Install the KF titration cell as follows:

1 Screw the 6.2013.010 clamping ring tightly to the support rod.

2 Mount the 6.1414.030 vessel lid of the KF titration cell on the support rod. Keep the locking lever pressed down until it can be released at the desired position.

3 Fasten the 6.1415.220 (or 6.1415.250) titration vessel with a 6.1903.020 (or 6.1903.030) stirring bar inside on the vessel lid. Fold back the support bracket upwards while doing so. The markings on the vessel lid and on the plastic ring must be aligned above one another.



4 Press the support bracket downwards in order to fasten the titration vessel in place. The levers of the holding bracket must enclose the pins of the plastic ring on the titration vessel in order to ensure a secure hold.

5 Adjust the height of the KF titration cell by pressing the locking lever. It should almost touch the surface of the stirrer. The position can now be fixed by readjusting the clamping ring.

Once the height of the KF titration cell has been adjusted correctly, the entire cell can be raised and swiveled as required by pressing the locking lever.

4.3 Connecting the 803 Ti Stand

Connect the titration stand as follows:

1 Exit the control software.

2 Connect the connection cable of the titration stand to one of the sockets marked with **MSB** on the rear of the control instrument.

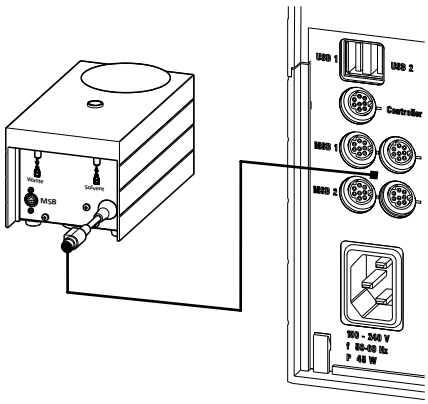


Figure 3 Connecting the 803 Ti Stand

3 Connecting an additional device (e.g. Dosimat or Dosino) to the MSB connector of the titration stand (optional).

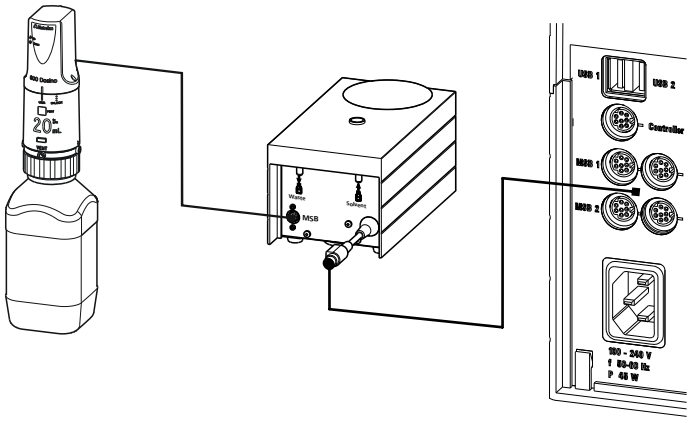


Figure 4 Connecting the Dosino to the 803 Ti Stand

4 Start the control software.

4.4 Mounting the accessories

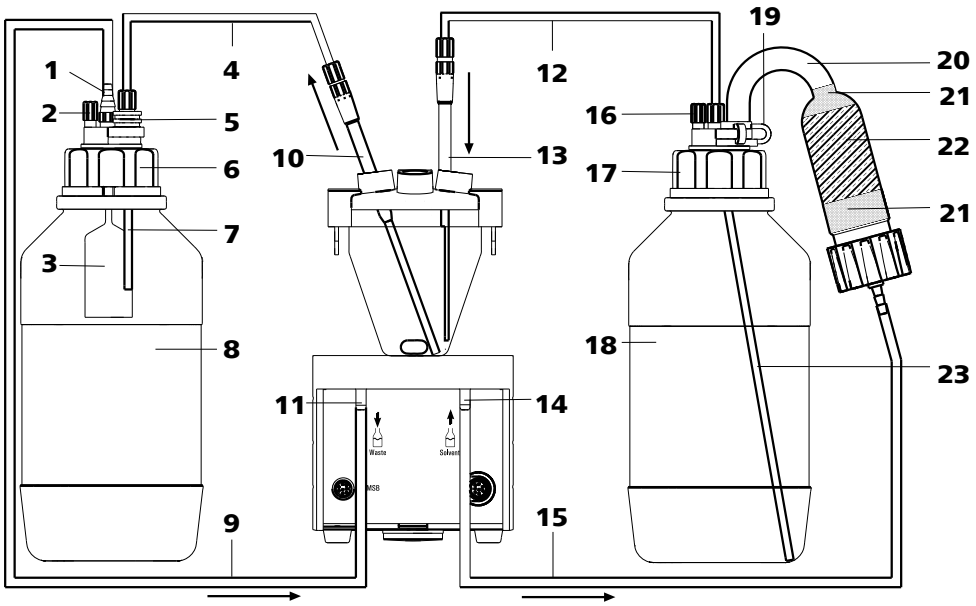


Figure 5 803 Ti Stand with volumetric titration vessel and equipment for automatic reagent replacement.

1	**Tubing adapter 6.1808.050**	**2**	**Threaded stopper 6.1446.040**
3	**Overflow protection 6.1623.000**	**4**	**PTFE tubing 6.1805.200**
5	**Stopper 6.1446.090**	**6**	**6.1602.105 bottle cap** For direct dosing out of reagent bottles with GL 45 thread.
7	**Cannula 6.1819.050**	**8**	**Amber glass bottle 6.1608.030** Waste bottle.
9	**PVC tubing 6.1801.120**	**10**	**Aspiration tip 6.1543.120**
11	**Connection nipple for PVC tubing** For aspirating the titration vessel content.	**12**	**PTFE tubing 6.1805.200**
13	**Transfer tip 6.1543.110**	**14**	**Connection nipple for PVC tubing** For aspirating solvent.
15	**PVC tubing 6.1801.120**	**16**	**Threaded stopper 6.1446.040**
17	**6.1602.105 bottle cap** For direct dosing out of the reagent bottle with GL 45 thread.	**18**	**Amber glass bottle 6.1608.023** Solvent bottle
19	**6.2023.020 ground-joint clip**	**20**	**Adsorber tube with tubing nipple 6.1609.010**

21 Cotton

22 6.2811.000/6.2811.010 molecular sieve

23 Cannula 6.1819.030

Mounting the equipment for aspirating

Mount the waste bottle as follows:

1. Equip the 6.1602.105 bottle cap with the 6.1446.040 threaded stopper, the 6.1808.050 tubing adapter and the 6.1446.090 stopper.
2. Plug the 6.1623.000 overflow protection from below into the 6.1602.105 bottle cap (the opening, the 6.1808.050 tubing adapter is plugged in).
3. Screw the 6.1602.105 bottle cap onto the 6.1608.030 waste bottle.
4. Cut the 6.1801.120 PVC tubing into two halves and use one of these for aspiration.
5. Fasten the one end of the aspiration tubing to the tubing adapter, the other to the connection nipple for the waste on the rear of the titration stand.
6. Insert the 6.1819.050 cannula through the 6.1446.090 stopper into the waste bottle.
7. Screw the 6.1805.200 PTFE tubing into the 6.1446.090 stopper.
8. Screw the 6.1543.120 aspiration tip to the other end of the PTFE tubing.
9. Insert the aspiration tip down to the bottom of the titration vessel to be emptied and fasten it to the titration vessel lid.

NOTE

The waste bottle should periodically be emptied.

Mounting the equipment for aspirating solvent

Mount the solvent bottle as follows:

1. Fill the 6.1609.010 adsorber tube and the 6.2811.000/6.2811.010 molecular sieve with cotton.

2. Use the other half of the 6.1801.120 PVC tubing previously cut in two pieces for aspirating the solvent. Fasten the one end of the tubing to the lower end of the adsorber tube, the other end to the connection nipple for aspirating the solvent.

3. Equip the 6.1602.105 bottle cap with the 6.1446.040 threaded stopper and the 6.1609.010 adsorber tube.

4. Secure the adsorber tube with the 6.2023.020 ground-joint clip.

5. Insert the 6.1819.030 cannula into the last open hole (with medium-sized diameter) of the 6.1602.105 bottle cap.

6. Screw the 6.1602.105 bottle cap onto the solvent bottle.

   Instead of the 6.1608.023 amber glass bottle, other reagent bottles with GL 45 thread can also be used (e.g., RIEDEL DE HAEN (1 liter), BAKER). For other bottles another bottle cap or an additional thread adapter have to be used.

   MERCK bottles: 6.1602.110 bottle cap

   FLUKA bottles, RIEDEL DE HAEN (500 mL): 6.1602.100 bottle cap with 6.1618.000 thread adapter

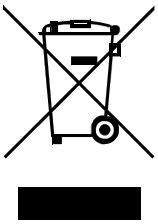
7. Screw the 6.1543.110 dosing tip to the free end of the 6.1805.200 PTFE tubing, insert it into the titration vessel and fasten it to the titration vessel lid.

5 Troubleshooting

5.1 Problems

Problem	Cause	Remedy
Solvent is added at the same time during aspiration.	*The drying tube is blocked.*	▪ Enlarge the hole of the drying tube cover to 2 mm at least. ▪ Refill the drying tube, not packing too tightly, eventually removing some of the molecular sieve.
The pump conveys no liquid.	*The add/aspirate key is not pressed tightly enough.*	▪ It is usually the case that the bottle attachments are not screwed tightly enough to the reagent and waste bottles. ▪ Check all connections for leak-tightness. ▪ Check whether the 803 Ti Stand has been set up correctly.
The solvent flows on into the titration vessel after the addition, without the add key being pressed.	*The solvent bottle is not set up correctly.*	Set the solvent bottle up in such a way that the liquid level in the bottle is lower than that in the titration vessel.

6 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.

7 Technical specifications

7.1 Rotational speed

Maximum rotational speed	±1700 ... 1900 r/min
Setting of the rotational speed	±15 steps
Increase of rotational speed per step	±115...125 U/min

7.2 Pump

Add	> 600 mL/min. (at 25 °C; standard accessories)
Aspirate	> 400 mL/min. (at 25 °C; standard accessories)

7.3 Power supply

Voltage	+12 V, -12 V, +5 V
Power consumption	4 W
Fuse	Electronic overload protection

7.4 Ambient temperature

Nominal function range	+5…+45 °C (at a maximum of 85% humidity)
Storage	–20…+60 °C
Transport	–40…+60 °C

7.5 Dimensions

Width	106 mm
Height (without stand)	101 mm
Height (with stand)	412 mm
Depth	220 mm
Weight	1100 g

7.6 Material of housing

Polybutylene terephthalate (PBT)

8 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.