Gebrauchsanleitung | Operating manual | Mode d'emploi | Instrucciones de manejo | Istruzione | Instruções de utilização | 操作手册 | Руководство по эксплуатации | 사용 지침 | Bruksanvisning | 使用説明書 | Használati utasítás | Návod kpoužití | Gebruiksaanwijzing | Instrukcja użytkowania | Kullanım Talimatları

HandyStep® touch
HandyStep® touch S

Mehrfachdispenser | Multi Dispenser

Table of Contents

1 Scope of supply

HandyStep® touch, DE-M marking, performance certificate, operating manual, quick reference guide, wall/shelf mount, lithium-ion battery, universal power adapter and USB type C cable.

2 Terms of use

- Carefully read the operating manual before using the device for the first time.
- The operating manual is part of the device and must be kept in an easily accessible place.
- Be sure to include the operating manual if you transfer possession of this device to a third party.
- You can find up-do-date versions of the operating manual on our website: www.brand.de.

2.1 Hazard levels

The following signal words identify possible hazards:

Signal word	Meaning
DANGER	Will lead to serious injury or death.
WARNING	May lead to serious injury or death.
CAUTION	May lead to minor or moderate injuries.
NOTICE	May lead to property damage.

2.2 Symbols

Symbol	Meaning	Symbol	Meaning	Symbol	Meaning
	Danger area		Biohazard		Property damage warning
	Electric voltage		Explosive materials		Do not dispose of in household waste
	Hot surface		Magnetic fields		Represents a display gesture.

2.3 Format

Format	Meaning	Format	Meaning
1. Task	Indicates a task.	>	Indicates a condition.
a., b., c.	Indicates the individual steps of a task.	⇨	Indicates a result.

3 Safety regulations

3.1 General safety regulations

Please read carefully!

The instrument HandyStep® touch can be used in combination with hazardous materials, work processes and equipment. However, the operating manual cannot cover all of the safety issues that may occur in doing so. It is the user's responsibility to ensure compliance with the safety and health regulations and to specify the corresponding restrictions before use.

1. Every user must read and observe this operating manual before using the device.
2. Follow the general hazard instructions and safety regulations, e.g. wear protective clothing, eye protection and protective gloves.
3. When working with infectious or hazardous samples, the standard rules and precautions must be adhered to.
4. Follow the instructions given by the reagent manufacturer.
5. Do not operate the device in potentially explosive atmospheres.
6. Do not pipette highly flammable media.
7. Use the device only for dosing liquids and only within the defined limits and exclusions of use. Comply with the operating exclusions; see Limitations of use, p. 120. In case of doubt, contact the manufacturer or dealer.
8. Always perform work in a manner that does not endanger the user or other people. Avoid splattering. Use only suitable vessels.
9. When a tip is inserted, it is automatically locked in place. When using a previously used tip, ensure that it does not contain any residual liquid.
10. Press the STEP button of the device only when it can be ensured that the dispensed liquid does not pose a risk.
11. Avoid touching the tip opening when working with aggressive media.
12. Never use force.
13. Use only original accessories and original replacement parts. Do not make any technical modifications. Disassembly of the device is not permitted.
14. Always check that the device is in proper working condition before use. If a device fault is signaled, stop dosing immediately and follow the instructions in the chapter Troubleshooting, p. 115. Contact the manufacturer, if necessary.

3.2 Battery

1. Use only the USB cable included in delivery of the device. If other cables are used, damage to the device and charging stand can occur.
2. The device and power adapter may become very hot when charging. Do not cover these devices.
3. If the device overheats in the area of the charging socket, the USB cable could be defective; replace the USB cable with a new OEM cable.
4. In applications that require a lot of battery power, the device can occasionally become very hot (e.g. when working with high-volume tips). In this case, pause pipetting and only resume once the device has cooled.

5. Never use non-original or damaged power supplies, charging stands or batteries. Non-approved power supplies or cables can cause the battery to explode or lead to damage of the device.

3.3 Inductive charging

1. Use only the original charging stand for inductive charging.
2. During inductive charging, do not place electrically conductive or magnetic objects between the device and the charging stand.
3. The device, charging stand and power adapter may become hot during inductive charging. Do not cover these devices.
4. Do not operate the charging stand outside.
5. People with medical implants are advised to consult with a doctor before using the charging stand, in order to determine whether the charging stand poses a potential health risk. Please also observe the applicable regulations regarding the handling of medical implants and radio wave sources (charging stand).
6. Other devices can be affected during the inductive charging process if they are in close proximity to the charging stand.
7. Radio waves can be emitted during inductive charging. If the device is not used as described in the operating manual, harmful interference cannot be excluded.

3.4 Touchscreen display

The touchscreen display can crack if exposed to extreme pressure. Discontinue use of a device with a cracked display and send it in for repair. Apply tape to the display before sending. Please also observe the transport regulations, see Sending for repair, p. 127.

3.5 Usage limits

See Limitations of use, p. 120.

3.6 Operating Exclusions

- When the device is operated properly, the dosed liquid comes in contact only with the tip and not with the device itself.
- The user is responsible for checking the suitability of the device for the intended use. This presumes that the user is sufficiently qualified for the tasks described in this instruction manual.
- Do not use the device to dose liquids that corrode polypropylene, polyethylene (tip) or polycarbonate (housing).
- Avoid aggressive vapors (risk of corrosion).
- The device must not be used for oxidizing acids since metal parts and the electronics can be corroded.
- If the device is modified by the user, it must no longer be operated. All modifications must be expressly authorized by the manufacturer.

USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15B (HandyStep® touch and HandyStep® touch S)and part 18 (charging stand) of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This device complies with the Industry Canada RSS-216 standard and operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference received, including interference that may cause undesired operation of the device.

3.7 Materials used

See Materials used, p. 120.

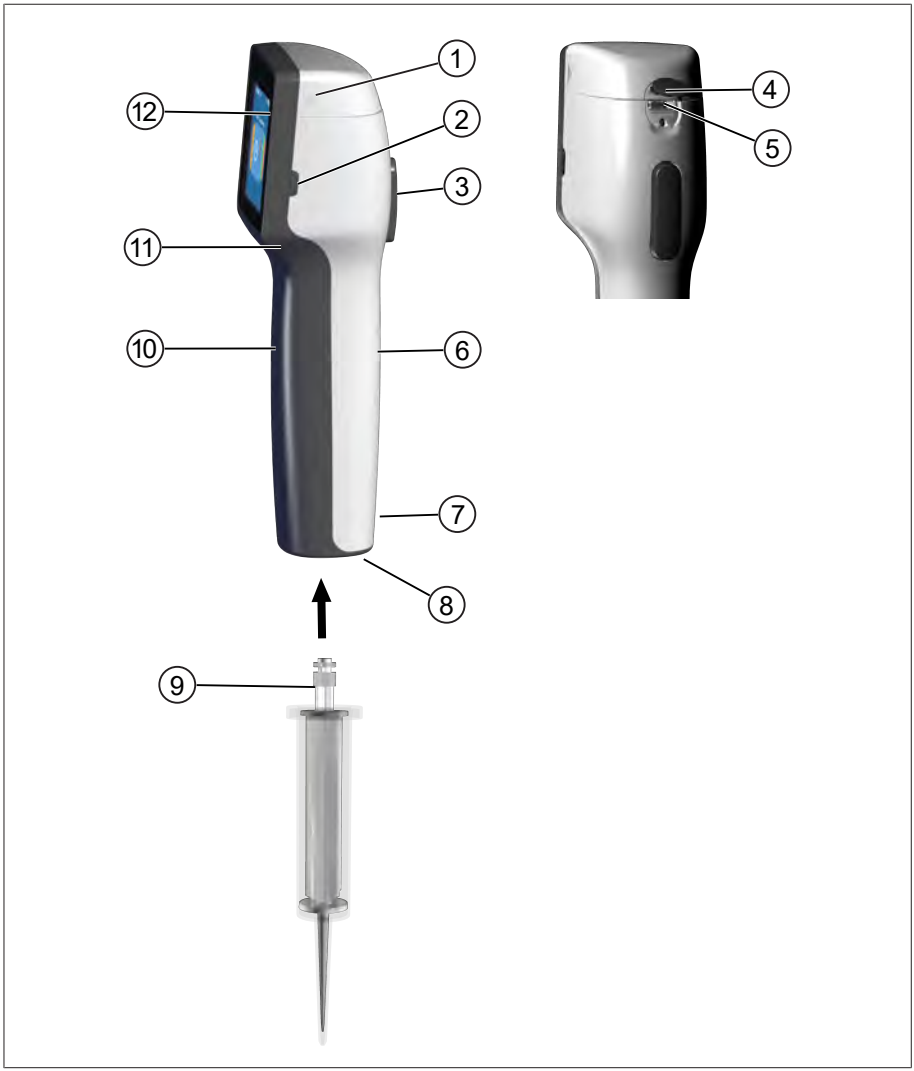
3.8 Type plate and marking

The device, battery, power adapter and charging stand must be stored and transported in dry conditions; avoid exposure to direct sunlight.

4 Intended use

The HandyStep® touch and the HandyStep® touch S are microprocessor-controlled, battery-powered hand dispensers operated by touchscreen. BRAND precision dispenser tips (PD tips II) with type coding are automatically recognized by the device according to their nominal volumes and allow quick volume selection. Compatible dispenser tips from other manufacturers can also be used after manually selecting the corresponding volume.

5 Functions and controls

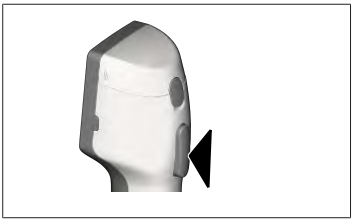


1 Battery compartment cover
2 Power button
3 STEP button
4 Cover
5 Multifunction jack
6 Handle piece, rear side
7 Markings
8 Tip adapter
9 Precision dispenser tip
10 Handle piece, front side
11 Grip recess
12 Touchscreen display

5.1 STEP button

Depending on the mode, the STEP button initiates liquid dispensing and liquid aspiration. The device outputs messages to the touchscreen display on how to operate the STEP button. Operation of the STEP button can vary depending on which operating mode you have chosen. The STEP button can be pressed across the entire surface. The following actions can be distinguished:

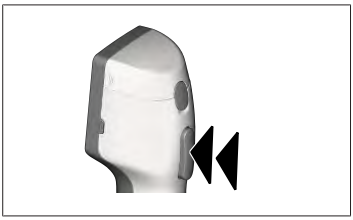
Briefly pressing the STEP button (“click”)



Example application:

Aspirating liquid, dispensing liquid, interrupting liquid aspiration (mode-dependent), inserting or ejecting a tip

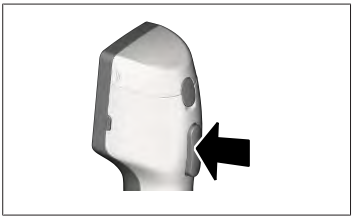
Briefly pressing the STEP button twice ("double click")



Example application:

Refilling a tip.

Pressing and holding the STEP button



Example application:

Completely emptying a tip, automatically dispensing liquid (in Auto-Dispensing mode), manual titrating (in Titration mode).

5.2 Power button

Use the power button to switch the device on and off. It is also used to put the device into standby mode.

5.3 Battery

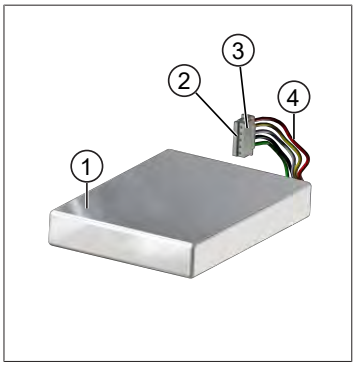
⚠ WARNING

Damaged or incorrect battery
Possible personal injury
> Use only the original battery.
> Use only the original power adapter.
> Do not puncture, bend, ignite, compress, short circuit or overheat.
> Do not touch a leaking battery with bare hands. Wear safety gloves!
> Dispose of damaged batteries in accordance with legal requirements.
> Operate the battery only within the specified temperature ranges!
> Follow the instructions on the battery!

NOTICE

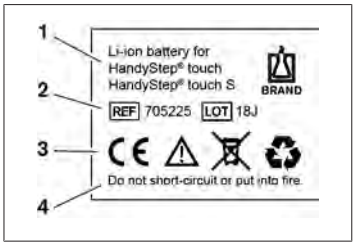
> Charge the battery before the first use or if you have not used the device for an extended time. This prevents premature wear of the battery.
> Replace the battery after its service life has been exceeded (~ 3 years), in case of deformation or in the event of extremely short charging cycles and a resulting shorter duration of use.
> When storing the device, disconnect the battery plug.

Components



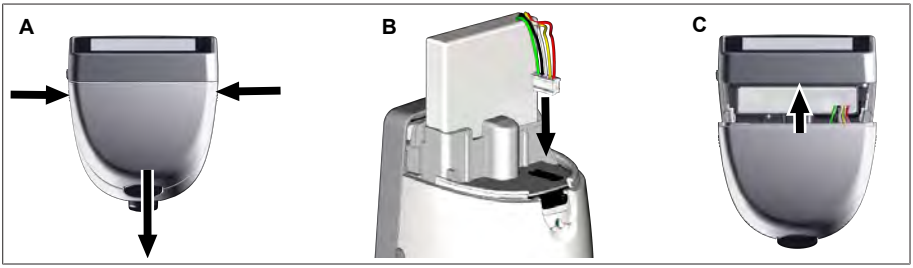
1 Battery
2 Contacts
3 Reverse polarity protected plug
4 Cable

Label, rear side



1 Battery type and use
2 Part identification
3 CE marking
4 Warning label

5.3.1 Connecting the battery



Open the cover and connect the battery's reverse polarity protected plug firmly and straight into the socket. The device switches on when you have connected the battery. Then close the cover.

5.3.2 Charging the battery

a. Connect the cable to the power adapter and HandyStep® touch.

b. Plug the power adapter into the power outlet.

⇨ HandyStep® touch is charging.

5.3.3 Indicators on the display

Battery is ready for operation.

Battery is almost empty.

Battery is charging.

5.3.4 Standby mode

If the power button is pressed when the device is switched on, the device goes into standby mode and the display is turned off. Standby mode is used to extend battery life. To exit Standby mode, perform one of the following actions:

- Press the power button.
- Press the STEP button.
- Insert a tip.

5.3.5 Working while charging

You can continue to work while the device is charging. To do this, plug the USB cable into the multi-function jack on the device. The charging time is prolonged as a result. Working with the USB cable plugged-in is only possible if the battery is connected to the device.

5.3.6 Battery life

The battery life describes the amount of time the device can be used with a new battery. Battery life depends on several factors, including the condition of the battery itself, the display brightness, the speed settings or the medium in use. The battery life itself was determined in an automated process.

Medium (examples)	Distilled water (in accordance with ISO 3696)*	Canola oil**
Tip	10 ml PD-Tip II	25 ml PD-Tip II
Battery	New and 100% charged	New and 100% charged
Device settings	Speed level 6 Medium display brightness	Speed level 4 Medium display brightness
Steps	20 steps of 0.5 ml	10 steps of 2.5 ml
Battery life	approx. 5 h	approx. 2 h

*Corresponds to normal power consumption

**Corresponds to maximum power consumption

5.4 Controls

Touchscreen display

You operate the touchscreen display with your thumb, in order to set the required values.

STEP button

You operate the STEP button with your index finger.

5.5 Power adapter and charging adapter

⚠ WARNING

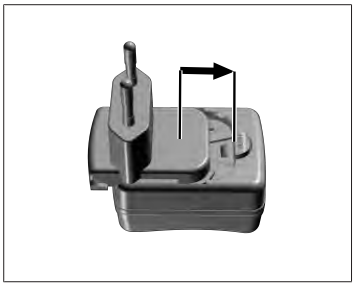
Possible personal injury caused by damaged or incorrect power adapter

- > Use only an original universal power adapter and the corresponding country adapter.
- > Do not cover the power adapter during use.
- > Do not use a damaged power adapter.

Power adapter	Country adapter				
	CN	GB	US	AU/NZ	EU

Power adapter	Country adapter				
					

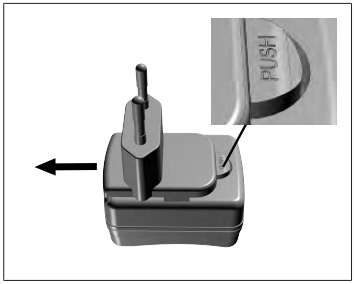
5.5.1 Connecting the charging adapter and the power adapter



a. Slide the charging adapter onto the power adapter until it clicks audibly into place.

⇨ The power adapter can be connected.

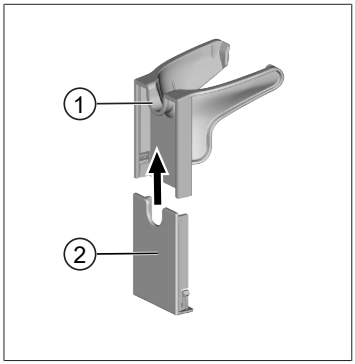
5.5.2 Detaching the charging adapter from the power adapter



a. Press the push button and remove the charging adapter.

5.6 Device holder

5.6.1 Mounting the device holder with tape



1 Universal holder

2 Mounting support with adhesive strips

a. Clean the mounting surface with a suitable cleaner (no moisturizing household cleaners) and a lint-free cloth, and allow it to dry thoroughly.

b. Remove the protective film from the adhesive strips.

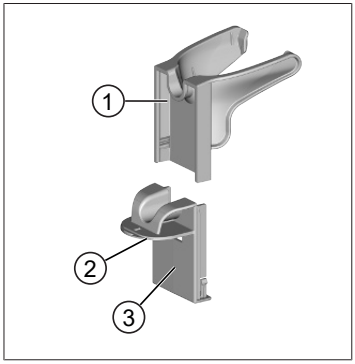
c. Using your thumb, **firmly** press the mounting support onto the cleaned surface. Wait **72 h** before first use.

d. Slide the universal holder onto the mounting support.

5.6.2 Mounting the device holder in the benchtop rack

a. Insert the holder into the benchtop rack without tape until it clicks audibly into place.

5.6.3 Mounting the device holder to the edge of the racks



1 Universal holder

2 Bottom

3 Mounting support

a. Clean the mounting surface and mounting support with a suitable cleaner (no moisturizing household cleaners) and a lint-free cloth, and allow it to dry thoroughly.

b. Remove one side of the protective film from the tape.

c. Apply the tape to the bottom and press firmly.

d. Then peel off the protective film from the other side and stick the mounting support onto the desired mounting edge.

e. Using your thumb, **firmly** press the mounting support onto the mounting surface. Wait **72 h** before first use.

f. Slide the universal holder onto the mounting support.

5.7 Charging stand (accessory)

⚠ WARNING

Possible personal injury caused by induction

> People with medical implants (e.g. pacemakers, pump implants) must maintain a safe distance. The Health Industry Manufacturers Association recommends that pacemakers maintain a distance of at least 15 cm from the radio wave source (charging stand).
> People with medical implants must consult a doctor before using the charging station.
> If you suspect your implant is affected, increase the distance away from the charging station and consult a doctor.

NOTICE

Inductive charging via the charging stand

The charging stand can charge inductively as soon as the power adapter is connected. Do not place any magnetic data media (e.g. credit cards) near the charging stand.

Using the charging stand

The charging stand requires the power adapter and the USB cable of the HandyStep® touch or the HandyStep® touch S.

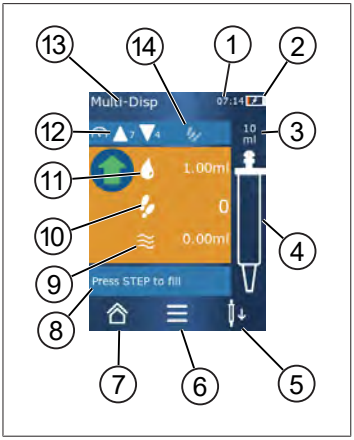
Charging stand indicators

- Charging stand light is blue: the battery is charging.
- Charging stand light is off: the battery is charged or there is no device in the charging stand.
- Charging stand lights up intermittently: the battery cannot charge. Place the device in the charging station again.

5.8 Holding stand (accessory)

The holding stand is used to safely store the device. The holding stand does not function as a charger.

5.9 Layout of the touchscreen display (work area)



1 Time
2 Charging status
3 Nominal volume of the inserted tip
4 Fill level of the tip
5 Eject (⇩) or insert (⇧) tip.
6 Open options
7 Open main menu (Home)
8 Information field
9 Available volume
10 Available STEPs in relation to the available volume
11 STEP volume
12 Aspiration and dispensing speed
13 Mode name
14 Area for specific functions.

5.10 PD-Tips II (precision dispenser tips II)

The device automatically recognizes the coded tips.

Volume [ml]	Order No.	Packing unit [pcs.]	Order No. BIO-CERT® LIQUID HANDLING STERILE	Packing unit [pcs.]
0.1	705700	100	705730	100
0.5	705702	100	705732	100
1	705704	100	705734	100
1.25	705706	100	705736	100
2.5	705708	100	705738	100
5	705710	100	705740	100
10	705712	100	705742	100
12.5	705714	100	705744	100
25	705716	25+1 Adapter	705746	25+1 Adapter
50	705718	50+1 Adapter	705748	25+1 Adapter
Set PD-Tips II 0,5 ml ... 12.5 ml	705720	per 20	—	—

5.11 Adapter for 25 ml and 50 ml PD tips II

Volume [ml]	Order No.	Packaging unit	Property
25 ml and 50 ml	702398	10	

Volume [ml]	Order No.	Packaging unit	Property
25 ml and 50 ml	702399	5	BIO-CERT® LIQUID HANDLING STERILE

6 Overview of modes

Modes	HandyStep® touch	HandyStep® touch S
Settings	+	+
Multi-Dispensing (MULTI-DISP)	+	+
Auto-Dispensing (AUTO-DISP)	+	+
Pipetting (PIP)	+	+
Sequential Dispensing (SEQ-DISP)	—	+
Multi-Aspiration (MULTI-ASP)	—	+
Titration	—	+
Favorites	+	+

Modes	Description
Settings	In Settings mode, you set the device for your work, e.g. time, display brightness. See Settings, p. 92.
Multi-Dispensing	In Multi-Dispensing mode, an aspirated volume is gradually dispensed again. Example application: dividing an aspirated volume into STEPs. See Multi-Dispensing (MULTI-DISP), p. 95.
Auto-Dispensing	In Auto-Dispensing mode, a volume is aspirated and gradually automatically dispensed over a previously set time interval. Example application: automatically dividing an aspirated volume into numerous STEPs. See Auto-Dispensing (AUTO-DISP) , p. 98.
Pipetting	In Pipetting mode, a previously selected volume is aspirated once and dispensed again. See Pipetting (PIP), p. 101.
Sequential Dispensing (SEQ-DISP)	In Sequential Dispensing mode, an aspirated volume is dispensed over several, preset STEPs of varying size. Example application: dilution series. See Sequential Dispensing (SEQ-DISP), p. 103
Multi-Aspiration (MULTI-ASP)	In Multi-Aspiration mode, several STEPs are collected in a tip and aspirated and dispensed as a total volume. Example application: removing residual volumes. See Multi-Aspiration (MULTI-ASP), p. 106.
Titration	In Titration mode, a volume is aspirated and either quickly or slowly dispensed. The dispensed volume can be read on the display. Example application: determining pH values. See Titration, p. 109.
Favorites	In Favorites, you can save frequently used settings. You can reopen these favorites using this menu. See Favorites, p. 112.

7 Operation

⚠ WARNING

Possible damage to health caused by pathogenic liquids or infectious germs.
> Wear appropriate protective gear.
> When handling the above-mentioned media, please observe the national regulations, safety data sheets, the protection level of your laboratory and safe working measures.

NOTICE

Device damage caused by incorrect use.
> Submerge only the tip into a liquid.
> If the device comes into contact with a liquid, clean it immediately.
> Hang the device upright in the holder provided.

7.1 Switching on the device

a. Press the power button.

⇨ The main menu opens.

Start Motor Init

If using the device after a long period of non-use, you will be prompted to perform a motor initialization after switching on the device:

a. Confirm the message "Start Motor Init."

⇨ Motor initialization is carried out.

⇨ The device moves the tip adapter into working position.

⇨ The main menu opens.

Charging stand/USB cable

The device switches on when it is placed in the charging stand or when the USB cable is connected. This also stops standby mode.

7.2 Switching off the device

a. Drain and eject the tip, see Dispensing liquid, p. 90 or Ejecting the tip, p. 88

b. Press the power button.

⇨ A message appears asking if you would like to switch off the device. Confirm by tapping ✓. Cancel by tapping ✕.

c. If the power button is pressed for approx. 1 s, the device goes into standby.
If the power button is pressed for longer than 2 s, you are asked if you would like to switch off the device.

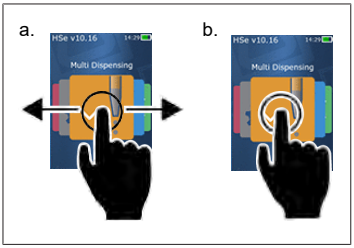
d. Confirm message.

e. Hang the device upright in the holders provided. If the device is placed in the charging stand, charging begins. In doing so, the LED of the charging stand lights up.

If the touchscreen display or the device no longer respond, consult the Device behavior, p. 115 section in the chapter Troubleshooting.

7.3 Opening an operating mode

You select an operating mode from the main menu. The actual task (e.g. dispensing) is carried out in the operating mode.



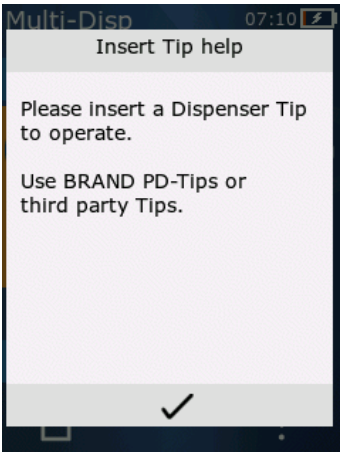
a. Swipe to select the operating mode.
b. Open the operating mode by tapping once.
⇨ The operating mode appears.

7.4 Exiting an operating mode

a. In the operating mode, tap the ⌂ button.
⇨ The main menu appears.

If there is any liquid left in the tip, you will be asked if you would like to drain the tip or continue working in another operating mode with the remaining volume.

7.5 Opening Context Help



The Context Help window helps you answer questions about functionality in the respective operating mode or menu.

7.6 Inserting tips

7.6.1 Inserting BRAND PD tips

Prerequisite:

> The operating mode has been selected

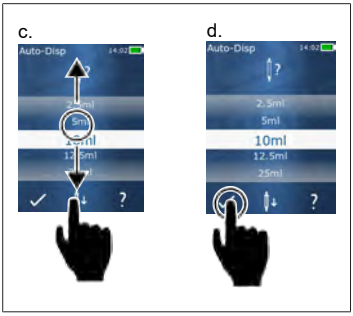
a. Insert the tip.

b. Press the STEP button. The tip is connected to the device and the volume is set.

⇨ The operating mode appears again.

⇨ The liquid can be aspirated.

7.6.2 Inserting compatible third-party tips (without coding)



Prerequisite:

> The operating mode has been selected

a. Insert the tip.

b. Press the STEP button.

c. Set the volume.

d. Confirm the selection by pressing the ✓ button.

⇨ The operating mode appears again.

⇨ The liquid can be aspirated.

7.6.3 Inserting compatible third-party tips (with coding)

After inserting the tip, check that the correct tip volume has been applied, see Setting the volume, p. 91.

7.6.4 Inserting tips without an operating mode selected

You can also insert tips before you select an operating mode. In order to set the volume or to have the compatible tip automatically recognized, an operating mode must be selected.

7.7 Ejecting the tip

Prerequisite:

> You have drained the tip.

a. Hold the device with the tip above the waste bin.

b. Tap on the ⇕ button, then press the STEP button.

⇨ The tip is ejected.

⇨ The device moves into tip loading position.

7.8 Aspirating liquid

NOTICE

Priming tips before use
We recommend priming a new tip before use. To do this, fill the tip with a minimal amount of liquid and empty it (see Filling an empty tip Filling an empty tip, p. 89 and Interrupting filling of the tip Interrupting filling of the tip, p. 89). Small air bubbles in the area of the piston after priming do not affect the results.

7.8.1 Filling an empty tip

Prerequisite:

> An operating mode has been selected.
> On the touchscreen display, the message ‘Press STEP to fill’ appears.

a. Hold the tip vertically in the vessel.

b. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.

c. Press the STEP button.

The tip is filled until the set volume or the nominal volume is reached.

NOTICE

Reverse stroke (play compensation)
During filling, the device performs a reverse stroke, which guarantees accuracy of the STEP volume setting. This way, the first STEP does not have to be discarded.

7.8.2 Interrupting filling of the tip

a. To interrupt filling of the tip, press the STEP button.

⇨ Filling is suspended immediately. You can dispense the aspirated volume again with the STEP button, drain the tip or resume the filling process.

7.8.3 Filling a partially drained tip

a.

a. Switch to refill.

b. Hold the tip vertically in the liquid.

c. Press the STEP button 2 times in quick succession.

⇨ The liquid is aspirated until the nominal volume has been reached.

d. To stop filling the tip, press the STEP button.

⇨ The operating mode appears again. You can continue dispensing.

NOTICE

Reverse stroke (play compensation)
During filling, the device performs a reverse stroke, which guarantees accuracy of the STEP volume setting. This way, the first STEP does not have to be discarded.

7.8.3.1 Automatically switching to filling

After dispensing all of the requested STEPs, liquid with a volume of less than 1 STEP remains in the tip (residual volume). The device automatically switches into the filling mode that will allow you to refill the tip.

a. Press the STEP button 2 times in quick succession.

⇨ Liquid is aspirated until the tip is completely filled.

7.9 Dispensing liquid

7.9.1 Dispensing volumes or individual STEPs

Prerequisite:

> An operating mode has been selected.

> A volume has been aspirated.

a. Place the tip on the vessel wall.

b. Hold the device at an angle of 30 ... 45° to the vessel wall.

c. Press the STEP button.

⇨ Depending on the operating mode selected, either one STEP or the entire volume is dispensed.

To stop dispensing, tap on the ✕ button.

7.9.2 Switching to emptying

a.

a. Switch to emptying.

b. Hold the device at an angle of 30 ... 45 ° to the vessel wall.

c. Press and hold the STEP button.

⇨ Liquid is dispensed; the tip is drained completely.

⇨ The operating mode appears again. Your can aspirate new liquid or eject the tip.

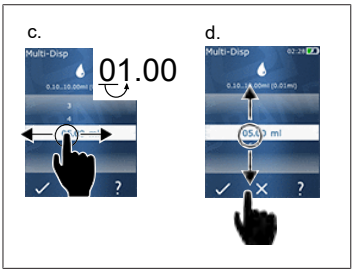
7.9.3 Discarding the residual volume

After dispensing all of the available STEPs, liquid with a volume of less than 1 STEP remains in the tip. The device automatically switches into the mode, in which you can discard the remaining volume.

a. Press and hold the STEP button.

⇨ The tip is drained completely.

7.10 Setting the volume



Prerequisite:
> An operating mode has been selected.

a. Tap on the button.

⇨ The volume setting appears.

b. Select the volume by setting a volume from the range of values.

c. Swipe to the left or right to change the position.

d. Swipe upward or downward to set the value.

e. Confirm the setting by tapping the button. Discard the setting by pressing the **X** button.

⇨ The operating mode appears.

Switch to keypad, see Keypad, p. 94

7.11 Setting the aspiration and dispensing speed

Adjust the speed to your respective application.

Prerequisite:
> An operating mode has been selected.

a. Tap on the ▼ ▲ button.

⇨ The speed settings appear.

b. Set the aspiration and dispensing speed by selecting a speed from the value range 1 ... 8.
1 = slow, 4 = medium, 8 = fast

c. You can set different speeds for aspiration and dispensing.

d. Confirm the selection by pressing the ✓ button. Discard the setting by pressing the ✕ button.

⇨ The operating mode appears again.

8 Settings

Configure your device for daily usage. Tap on ‘Settings’ in the main menu.

8.1 Language

Set the display language and the help language. The available languages are German, English, French, Spanish and Chinese.

8.2 Device

Set the device name. To select characters, drag these to the white bar with your index finger. To change position, swipe to the left or right. The device name can consist of letters, numbers and special characters.

To add uppercase letters, tap on the ABC button.

To add lowercase letters, tap on the abc button.

To add numbers and special characters, tap on the 123 button. The following special characters are available: plus, minus, underscore, comma, period, space (between the number 9 and minus).

8.3 Date / time

Set the date, time and the time and date format.

To exit this function, tap on the ◁ button.

The following abbreviations describe the time and date formats (value range in parentheses):

Hour	hh (00 ... 23)	h (0 ... 23)
Minute	mm (00 ... 59)	m (0 ... 59)
Day	DD (01 ... 31)	D (1 ... 31)
Month	MM (01 ... 12)	M (1 ... 12)
Year	YYYY (2019 ... 2050)	YY (19 ... 50)

8.4 Display

Brightness	Adjust the brightness level via the slide switch.
Display time out	Set the amount of time before the display first dims and then turns off.
Auto power off	Set whether the device switches off by itself after 60 minutes in standby mode.

8.5 Sound

NOTICE

Event sound
When an event occurs, the device makes a sound. This event sound cannot be switched off.

Notification sound	Enable sound alerts for program events.
STEP button sound	Enable sounds when the STEP button is pressed.

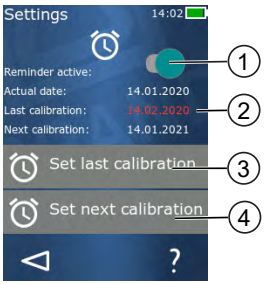
8.6 Info/about

Version	Firmware version
Date	The date the firmware was generated.
Bootloader	Software tool

8.7 Regulatory notes

Information about approvals can be found via this menu item.

8.8 Calibration



1. Activate reminder
2. Illogical entries are shown in red. In this case, the last test date lies in the future.
3. Set the last date on which the device was tested.
4. Set the next date on which the device is to be tested.

Prerequisite:

> You have just tested the device and would like to be reminded of the next device test. This way you ensure that your device is inspected on a regular basis.

a. Set the date of the last test. This date can be in the past, present or future.

b. Set the date of the next test. This date must be in the future.

c. Activate the reminder via the slide switch.

⇨ If the test interval has expired, you will be reminded of the new device inspection via a message in the display.

⇨ It is best to set these dates immediately after an inspection has been completed.

⇨ If the date of the last calibration is after the current date, it is shown in red.

⇨ If the date of the future calibration is before the current date, it is shown in red and the reminder cannot be activated.

8.9 Factory settings

The device can be reset to the factory settings in this menu item.

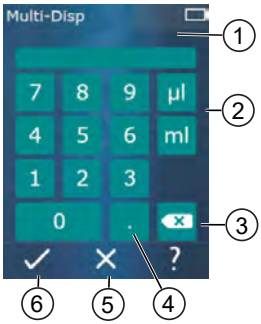
NOTICE

Factory settings
The factory settings overwrite all settings made by the user, both in the settings menu and in all available operating modes. This action cannot be reversed.

8.10 Switching tip detection on/off

If you are not working with BRAND tips or other compatible tips, you can switch off automatic tip detection, in order to reach the volume setting quicker.

8.11 Keypad



1 Available value range
2 Unit selection
3 Delete entered characters one at a time
4 Enter comma
5 Discard entry
6 Apply entry

Enter values (e.g. volume) via a keypad in the different operating modes. Values are entered from left to right, together with the comma. Depending on the available value range and the possible STEP intervals, up to 3 decimal places can be entered. Values less than or greater than the value range shown cannot be applied.

9 Multi-Dispensing (MULTI-DISP)

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

9.1 Aspirating liquid

Prerequisite:

> The STEP volume has been set via the button.

a. Hold the tip vertically in the vessel.

b. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.

c. Press the STEP button.

⇨ The device aspirates the liquid until the set volume or the nominal volume is reached.

The symbol displays the number of possible STEPs.

The ≈ symbol displays the available volume.

9.2 Interrupting and resuming liquid aspiration

9.2.1 Interrupting liquid aspiration

a. To stop liquid aspiration, briefly press the STEP button.

9.2.2 Resuming liquid aspiration

a. Tap on the button.

b. Press the STEP button 2 times in quick succession.

⇨ The device aspirates liquid.

9.3 Dispensing liquid

Prerequisite:

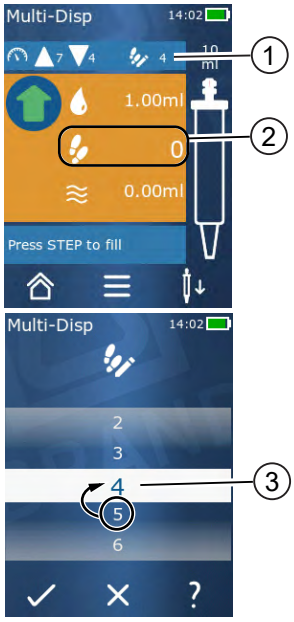
> Dispensing volumes or individual STEPs, see Dispensing volumes or individual STEPs, p. 90.

a. After pressing the STEP button, the number of STEPs to be dispensed ( ) decreases.

9.4 Handling residual volumes

For information on handling residual volumes, see Switching to emptying, p. 90 and Aspirating liquid, p. 89.

9.5 Presetting the STEP count



1 Switch the STEP count preset on/off.
2 Open the preset STEP count.
3 Preset the STEPs.

You can preset a number of STEPs. The number of STEPs that can be preset depends on the volume of the tips being used and the set volume. If you increase the STEP volume, the number of STEPs that can be preset is reduced, and vice versa.

Presetting the STEP count

a. Tap on the button.
b. Drag the desired count into the white field.
c. Confirm the selection by pressing ✓.
⇨ The STEP count preset is active.

If you aspirate liquid now, the device aspirates as much liquid as required for the preset. If there is more liquid in the tip than preset, you can continue working after dispensing the preset STEPs or discard the volume.

9.6 Options

a. In the operating mode, tap on the symbol ☰.
⇨ The Options menu appears.

Option	Meaning
Add to Favorites	Adds active settings to Favorites. You can open these again from the main menu under Favorites.
Preset the STEP count	Presets the STEP count.
Go to Auto-Disp	Switches to Auto-Disp mode. The volume set in Multi-Disp mode is also set in Auto-Disp mode.
Operating Mode Help	Shows the help text for the mode.

10 Auto-Dispensing (AUTO-DISP)

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

10.1 Automatically dispensing liquid

Prerequisite:

> You have set the pause time (an interval between liquid dispensing steps) manually or automatically.

> The tip is filled with liquid.

a. Press and hold the STEP button.

⇨ Liquid is dispensed automatically, as long as the STEP button is held down or as long as enough liquid is present in the tip.

⇨ While liquid is being dispensed, the pause time counts down on the touchscreen display.

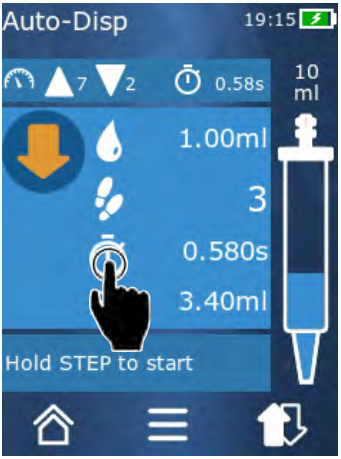
⇨ On the touchscreen display, you see the remaining STEPs.

10.2 Optimizing the dispensing duration

The liquid dispensing duration consists of the dispensing interval that you define and the dispensing speed. To optimize liquid dispensing, you adjust both parameters.

- For the dispensing speed, see Setting the aspiration and dispensing speed, p. 91.
- For the dispensing interval, see Setting the pause time manually, p. 98.

10.3 Setting the pause time manually



a. Tap on the ⏱ button.

b. Set the pause time.

c. Confirm the setting by tapping the ✓ button.

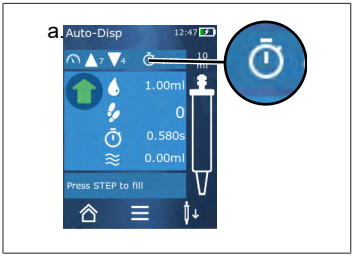
⇨ The pause time is set. By holding down the STEP button the next time you dispense a liquid, the liquid will be dispensed after the pause time has expired.

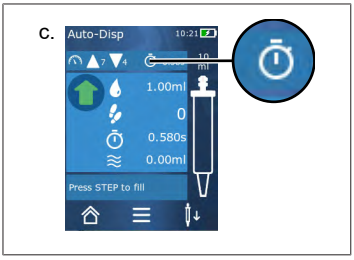
Alternatively, you can also use the learn function.

10.4 Setting the pause time automatically (learn function)

With the learn function, the device determines the average pause time after dispensing 3 or more times. When the user holds the STEP button after the learn function has ended, the device automatically dispenses liquid after the determined pause time has expired. This way, repetitive dosing tasks can be more easily managed by the user. Setting the pause time is also easier since it is calculated for the current dosing task.

10.4.1 Executing the learn function





Prerequisite:

> You have already filled the tip.

a. Tap on the ⏱ button.

⇨ The learn function is activated. This is indicated by the ✎…symbol.

b. Dispense liquid at least 3 times, by briefly pressing the STEP button.

⇨ You can immediately dispense liquid by holding down the STEP button. The learned pause time changes as long as the learn function is not stopped.

c. Stop the learn function by tapping the ✎… button.

⇨ Afterwards, the average time appears next to the ⏱ symbol.

You can also save the learned pause time in Favorites.

10.4.2 Alternative access to the learn function

a. Open Options via the ☰ button.

b. Swipe the ⏱ switch to the right.

c. Return to the work menu via the ◁ button.

⇨ The ✎… symbol indicates that the learn function is active.

10.4.3 Restarting the learn function

If while operating the device you notice that the pause time is too long or too short, you can restart the learn function. Alternatively, you can also adjust the pause time manually.

10.4.4 Stopping or shortening the learn function

The first time the STEP button is pressed, a 10-second countdown begins. When the countdown expires, the learn function ends automatically.

- To stop the learn function beforehand, tap on the X button.

- To stop the learn function after you have dispensed liquid by holding the STEP button, tap on the … button.
- To use the calculated pause time immediately, hold down the STEP button.

10.5 Handling residual volumes

For information on handling residual volumes, see Switching to emptying, p. 90 and Aspirating liquid, p. 89.

10.6 Options

a. In the operating mode, tap on the symbol ☰.

⇨ The Options menu appears.

Option	Meaning
Add to Favorites	Edits the time between the individual dispensing steps.
Learn pause time	Starts the learn function.
Go to Multi-Disp	Switches to the Multi-Disp operating mode. The volume set in Auto-Disp mode is also set in the Multi-Disp operating mode.
Operating Mode Help	Shows the help text for the mode.

11 Pipetting (PIP)

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

11.1 Setting the volume

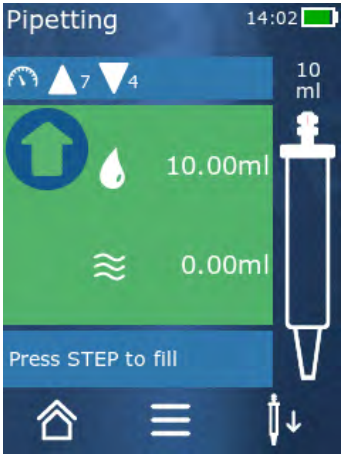
Prerequisite:

> The operating mode has been selected.

a. Tap on the button.

b. Set the volume.

11.2 Filling a tip



Prerequisite:

> The volume is set.

> On the touchscreen display, the message ‘STEP to fill’ appears.

a. Hold the tip vertically in the vessel. During aspiration, make sure that the tip opening is always covered by liquid, in order to prevent air bubbles in the tip.

b. Press the STEP button.

⇨ The tip is filled until the set STEP volume or the nominal volume of the tip is reached.

To stop filling the tip, press the STEP button.

11.3 Dispensing liquid and stopping liquid dispensing

a. Press the STEP button.

⇨ The tip is drained.

To stop dispensing liquid, tap on the X button.

11.4 Handling residual volumes

For information on handling residual volumes, see Switching to emptying, p. 90 and Dispensing liquid, p. 90.

11.5 Options

a. In the operating mode, tap on the symbol ☰.

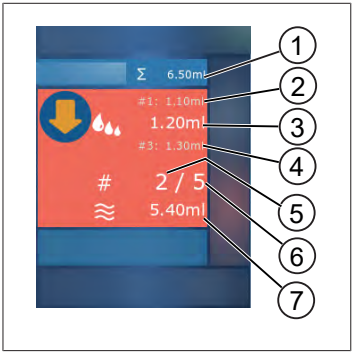
⇨ The Options menu appears.

Option	Meaning
Add to Favorites	Adds the selected settings to the Favorites menu. You can open the settings again from the main menu under ‘Favorites’.
Operating mode	Shows the help text for the mode.

12 Sequential Dispensing (SEQ-DISP)

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

12.1 Sequential Dispensing in detail



1. Accumulated volume of the aliquot list.
2. STEP previously dispensed.
3. STEP now being dispensed.
4. STEP to be dispensed next.
5. STEP number to be dispensed next.
6. Number of STEPs that you have designated in the aliquot list.
7. Present volume in the tip.

In Sequential Dispensing operating mode, you dispense a defined sequence of different or equal volumes of liquid. These volumes are called aliquots and are defined via the aliquot list (1 ... 10 aliquots). In the operating mode, you then see up to 3 entries of the aliqout list. These entries – specifically, the previous, current and next entry – are indicated by a number sign (#). If an aliquot is dispensed, the display moves down the list (**1**, #2, ⟶ #1, **2**, #3 ⟶ #2, **3**, #4 ... #10). It can only be dispensed if a sufficient volume has been aspirated.

If the aliquot amount exceeds the tip volume, you can aspirate liquid again and then continue dispensing.

If the aliquot amount is less than the tip volume, enough liquid is aspirated as is needed for the given aliquot list.

If you cancel an aliquot (X button on the display), this aliquot is counted as not dispensed. In this case, an event message is output. The program jumps to the next aliquot in the list. If there is not enough liquid in the tip at the end of aliquoting, the device aspirates exactly the required amount of liquid, in order to complete aliquoting.

The aliquot list can no longer be changed when the first aliquot has been dispensed. You can edit the aliquot list again only after you have completed dispensing.

12.2 Creating an aliquot list

You can create 1 ... 10 aliquots.

Prerequisite:

> You are in the operating mode.

a. Tap on the button.

⇨ The aliquot list appears.

b. Tap on the '+' symbol.

⇨ One aliquot is added to the list.

12.3 Editing an aliquot list

a. Tap on a list entry.

⇨ The context menu appears.

Edit	Edits the selected list entry. Operation similar to Setting the volume, p. 91.
Add	Add a list entry to the end of the list. The value of the previous list entry is preset as the aliquot value.
Insert	Insert a list entry in place of the selected list entry. The list entry is inserted above the selected list entry. The value of the selected list entry is preset as the aliquot value. This value can be added via the 'Edit' function.
Delete	Deletes the selected list entry. You can delete all but one of the entries in the list.

12.4 Dispensing liquid

Prerequisite:

> You are in the operating mode.

a. Press the STEP button.

⇨ The volume from the first aliquot list entry is dispensed.

⇨ Simultaneously, the next volume is selected from the aliquot list. This volume is dispensed the next time you press the STEP button.

12.5 Interrupting and ending aliquoting

a. Tap on the or the button.

⇨ The current aliquoting is ended.

12.6 Options

a. In the operating mode, tap on the symbol .

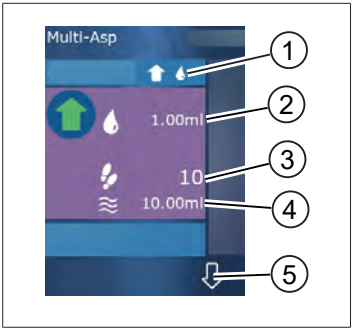
⇨ The Options menu appears.

Option	Meaning
'Edit aliquots'	Edit an aliquot list.
'Work Mode'	Shows the help text for the mode.

13 Multi-Aspiration (MULTI-ASP)

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

13.1 Multi-Aspiration in detail



1 Switch to filling mode. The selected filling mode is displayed here.
2 Set volume
3 Possible STEPs
4 Aspirated volume
5 Switch between dispensing and aspirating liquid. You can also switch to dispensing if the nominal volume has not been reached. In addition, you can also continue filling the tip after an interruption.

13.2 Preparing liquid aspiration

Prerequisite:
> Tip is empty and outside the liquid.

a. Press the STEP button.
b. The piston of the tip moves to the start position.
c. Select filling mode.
d. Press and hold the STEP button.
⇨ Liquid is aspirated.

13.3 Filling modes

In Multi-Aspiration operating mode, you can aspirate the same liquid or different liquids with the same tip. There are 3 modes available for aspiration:

‘Manual’ filling mode

In ‘Manual’ filling mode, you control liquid aspiration using the STEP button. Liquid is aspirated while you hold down the STEP button. Liquid aspiration stops when you let go of the STEP button or when the nominal volume is reached.

‘STEP volume’ filling mode

In ‘STEP volume’ filling mode, you set the STEP volume before liquid aspiration. Each time the STEP button is pressed,

the set volume is aspirated, and this continues until the nominal volume is reached.

‘Sequential’ filling mode

In ‘Sequential’ filling mode, you control liquid aspiration an aliquot list (1 ... 10 aliquots). In this table, different volumes can be defined, which are aspirated successively in this operating mode. Each time the STEP button is pressed, the current volume is aspirated. The program then switches to the next volume in the aliquot list, and this continues until all preset aliquots are aspirated. In the operating mode, you then see up to 3 entries of the aliqout list. These entries – specifically, the previous, current and next entry – are indicated by a number sign (#). If an aliquot is aspirated, the display moves down the list (**1**, #2, ⇨ #1, **2**, #3 ⇨ #2, **3**, #4 #10). The device automatically switches to liquid dispensing when the desired volume or the nominal volume is reached.

13.4 Dispensing liquid

You can switch back and forth between liquid aspirating and dispensing using the ⇧ and ⇩ buttons.

a. Tap on the ⇩ button.

⇨ The message ‘Hold STEP to empty’ appears.

b. To dispense liquid, hold down the STEP button.

To cancel liquid dispensing, press the **X** button. If the tip is drained, the program switches back to liquid aspiration.

13.5 Creating and editing an aliquot list for liquid aspiration

a. Select ‘Sequential’ filling mode.

b. Select Options > ‘Edit aliquots’ or tap on #1 ... #10.

c. Create and edit the aliquot list as described in the ‘Sequential Dispensing’ operating mode in the section Editing an aliquot list, p. 104.

13.6 Switching the operating mode

a. Tap on the ⌂ button.

b. If the tip is filled, a message appears asking if you would like to switch modes with the filled tip.

c. If only a residual amount is still present, a message then appears asking if you would like to discard the liquid. Once you confirm the message, the liquid is dispensed.

13.7 Options

a. In the operating mode, tap on the symbol ☰.

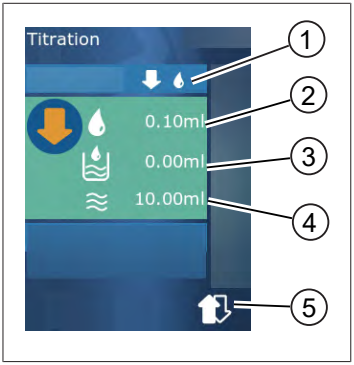
⇨ The Options menu appears.

Option	Meaning
Edit aliquot list	Edit an aliquot list.
Select filling mode	Select a filling mode.
Operating Mode Help	Shows the help text for the mode.

14 Titration

For information on the function of this mode, see Overview of modes, p. 85. For information on setting the volume, speed, and other steps found in all modes, see Operation, p. 86.

14.1 Titration in detail



1. Switch between ‘Manual‘ and ‘STEP Volume’ titration mode.
2. Set the STEP volume. This is possible in “STEP volume” titration mode.
3. Volume already titrated.
4. Amount remaining in the tip.
5. Discard remaining amount or aspirate liquid.

In Titration operating mode, you dispense liquid (standard solution) into another liquid (sample), e.g. to observe the color change. There are 2 different titration modes available for this task:

‘Manual’ titration mode

In ‘Manual’ titration mode, you control liquid dispensing using the STEP button. Liquid is dispensed while you hold down the STEP button. Liquid dispensing stops when you let go of the STEP button or when the existing volume in the tip is dispensed. Every time the STEP button is released, the dispensing speed is reduced on level (level 8, level 7, level 6 ... level 1). This makes it easier to achieve a color change point, for example.

‘STEP volume’ titration mode

In STEP titration mode, you specify the STEP volume **before** dispensing liquid. Each time the STEP button is pressed, the set volume is dispensed. The dispensing speed is also reduced each time the STEP button is pressed.

Saving volumes

This function is used to save the most recently set volumes in a list. If you use the same volume settings for the same titration tasks, you can use this function to achieve a color change point more quickly. To call up a list, see Options, p. 110.

14.2 Titration

This section explains how to use the titration operating mode using the color change of a pH value measurement as an example. You can switch the titration mode using the ⬇ or ⬇ button.

Prerequisite:

> You will need a transparent vessel, e.g. an Erlenmeyer flask, and the liquids required for the pH measurement.

a. Select the mode, in order to first dispense a large amount of liquid. Select the dispensing speed using the ▲▼ button.

b. Aspirate the liquid. Hold the device vertically above the Erlenmeyer flask.

c. Hold the STEP button to continuously dispense liquid.

d. Observe the immersion of the standard solution in the sample. As you near the color change point, switch to the mode.

⇨ The color change point is distinguished by the first color streaks in the sample.

e. Tap on the button. Set the desired volume.

f. Dispense the solution drop by drop by briefly pressing the STEP button until the color change is achieved.

14.3 Options

a. In the operating mode, tap on the symbol ☰.

⇨ The Options menu appears.

Option	Meaning
Add to Favorites	Adds active settings to Favorites. You can open these again from the main menu under Favorites.
Manual/STEP volume	Switches titration mode
Show last volumes	Displays the last volumes titrated.
Operating Mode Help	Shows the help text for the mode.

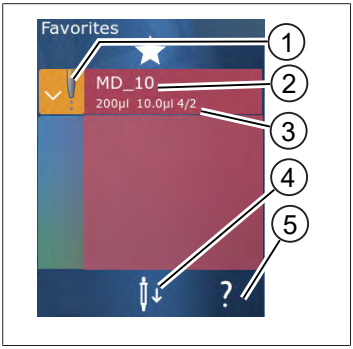
Show last volumes

The list shows the last 5 volumes that were saved by you. Newly saved volumes are added to the top, while older volumes are discarded.

15 Favorites

You can save settings in Favorites, in order to open them again later, e.g. volume or speed settings.

15.1 Favorites in detail



1. The Favorites symbol indicates the operating mode the favorite was saved in.
2. This line displays the name of the favorite.
3. The values show the settings saved in Favorites.
4. Eject or insert tip.
5. Show help.

15.2 Creating favorites

Prerequisite:

> You have opened an operating mode.

a. Tap on the ☰ button.

b. Select the option “Add to Favorites”.

c. Assign a name to the favorite.

d. Tap on the ✓ button.

⇨ The favorite is added to the end of the favorites list in the ‘Favorites’ menu. See Favorites in detail, p. 112.

15.3 Opening favorites

a. You are in the ‘Favorites’ menu.

b. Tap on an entry in the favorites list and select ‘Open’.

⇨ The settings are opened in the corresponding operating mode.

Favorite setting and tip volume are different

Each favorite is valid for one tip volume. If you open a favorite and the inserted tip has a different volume than the volume saved in the favorite, you will be prompted to insert the correct tip. You can then eject the existing tip and insert a different one.

15.4 Deleting favorites

Deleting individual favorites

Prerequisite:

> You are in the ‘Favorites’ menu.

a. Tap on an entry in the favorites list and select ‘Delete’.

b. Confirm the prompt.

⇨ The selected favorite is deleted.

Deleting all favorites

Prerequisite:

> You are in the ‘Favorites’ menu.

a. Tap on an entry in the favorites list and select ‘Delete all’.

b. Confirm the prompt.

⇨ The favorites list is deleted.

16 Cleaning and disinfection

16.1 Cleaning

NOTICE

The instrument is not autoclavable

The instrument is factory-calibrated and maintenance-free.

When the instrument is dirty, clean the outer surface with a moist cloth. Use water or a mild detergent solution. Avoid acidic or aggressive cleaners.

Disassembly of the instrument is not permitted.

16.2 UV disinfection

The device is resistant to normal exposure to a UV disinfection lamp. The device may change color due to the UV exposure.

UV disinfection recommendations:

Light spectrum	UV-C
Wave length	220 nm ... 270 nm
Exposure time per cm^2 and intended inactivation rate	2 s ... 300 s

17 Troubleshooting

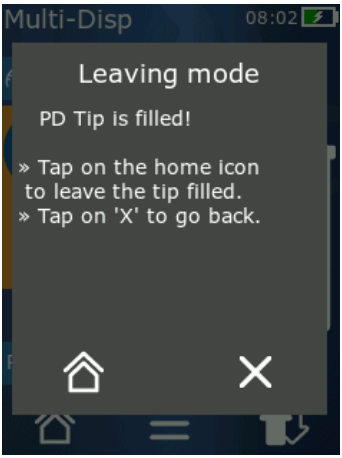
17.1 Device behavior

Fault	Possible cause	Corrective action
The battery charging cycle has been dramatically reduced.	The battery is old or damaged.	Replace the battery.
The device does not charge.	The battery cannot be charged when it is too cold or too warm.	Disconnect the battery plug. Let the battery warm up or cool down to room temperature. Connect the battery plug. Try charging again.
Duration of use without power connection has been dramatically reduced.	The battery is old or damaged.	Replace the battery.
The power adapter becomes extremely warm during charging.	The battery is old or damaged. The power adapter is damaged. The USB cable is damaged.	Replace the affected part.
The device does not charge.	The power adapter is damaged. The USB cable is damaged. The battery plug was disconnected. The battery cable is broken. The space between the device and charging stand is too great	Replace the affected part. Connect the battery plug. Place the device in the charging station again.
The display is too bright or too dark.	The display brightness level has been adjusted.	Change the brightness level, see Display, p. 93
The display turns white when the device is placed in the charging stand.	The device cannot start. The battery plug was disconnected.	Connect the battery plug.
No sounds are output when working with the device.	Sound notification is switched off.	Switch on sound notification, see Sound, p. 93
The touchscreen display no longer responds.	The program has crashed.	The device starts when the battery has been reconnected after the program crash. A message appears to warn that a tip may still be present in the device. Therefore, hang the device in the holder and place a suitable vessel under the tip or hold the device over a suitable vessel when starting. Troubleshooting:

Fault	Possible cause	Corrective action
		Open the cover, disconnect the battery plug, and wait 5 s before reinserting it. The device starts when the battery is sufficiently charged.
The tip drips.	The tip has a leak.	Replace the tip.
The tip is not recognized.	Code is damaged. Tip without coding used.	Eject the tip and reinsert. Use a new or coded tip.
There is interference (EMC) in close proximity to the charging stand. This interference unlikely since the power transmitted is low.	Charging stand emits interference during the charging process.	Increase the distance between the impaired device and the charging stand. Place the device in the charging station again. Make sure that there are no foreign objects between the charging stand and the device.

17.2 System messages

Example:



The device displays system messages to signal that certain program sequences were shortened. System messages inform the user about which options are available for further operation.

17.3 Event messages in the display

The device displays event messages to signal that the device has deviated from an intended state. Event messages inform the user about which options are available for further operation.

When the event message ‘Notice’ is displayed, you can continue working with the device. These event messages signal that the device was not able to execute a task as intended in the program. Example: battery is too weak.

When the event message ‘Error’ is displayed, a technical problem has occurred. If this event message is displayed again after a restart and when performing the same task, the accuracy and proper function of the device can no longer be guaranteed. Example: motor is blocked.

If the same event messages are repeatedly displayed, please contact BRAND.

18 Monitoring volumes

18.1 Testing instructions (SOP)

For additional information Calibration, see Calibration, p. 119.

https://www.brand.de/sop

18.2 Leak test of the PD tip

a. Insert a new PD tip.

⇨ The PD-Tip is recognized automatically or, in the case of compatible dispenser tips, select the volume size.

b. Change the volume to be dispensed.

c. Fill the PD-Tip.

d. Immerse the PD-Tip into the test liquid. Aspirate liquid at a steady rate. Hold the device down vertically for approx. 10 s: If a drop forms, then follow the instructions in the following table.

Tip is not recognized	No coding or coding damaged or tip not inserted correctly	Insert a new tip or reinsert, select the volume size
Tip drips	Tip leaky	Insert a new tip

19 Calibration

If the leak test (see Monitoring volumes, p. 118) has been successfully completed, a gravimetric measurement can determine if the device is within the limits defined by ISO 8655. The test method required for this is described in the testing instructions (SOP).

20 Technical data

20.1 Accuracy table

The measurements were carried out with BRAND PD-Tips *II*.

Distilled water was used as the test liquid.

The nominal volume is the maximum volume printed on the PD-Tip.

The tolerances specified in ISO 8655 are not exceeded.

			Accuracy A* ≤ ± %				Variation coefficient VC ≤ %			
			Nominal volume				Nominal volume			
PD-Tip	**Volume range**	**Volume steps**	**100 %**	**50 %**	**10 %**	**1 %**	**100 %**	**50 %**	**10 %**	**1 %**
0.1 ml	1 µl ... 100 µl	0.1 µl	1.0	1.0	1.6	8.0	0.5	1.0	2.0	12.0
0.5 ml	5 µl ... 500 µl	0.1 µl	0.9	0.9	1.0	5.0	0.3	0.6	1.0	5.0
1 ml	10 µl ...1 ml	1.0 µl	0.6	0.9	1.0	5.0	0.3	0.5	0.8	4.0
1.25 ml	12,5 µl ... 1.25 ml	0.5 µl	0.6	0.6	0.9	5.0	0.15	0.5	0.7	4.0
2.5 ml	25 µl ... 2.5 ml	1.0 µl	0.5	0.6	0.7	3.5	0.15	0.3	0.6	3.0
5 ml	50 µl ... 5 ml	1.0 µl	0.5	0.5	0.7	3.5	0.15	0.4	0.7	3.0
10 ml	100 µl ... 10 ml	10 µl	0.4	0.5	0.7	3.5	0.15	0.5	0.8	4.0
12.5 ml	125 µl ... 12.5 ml	5.0 µl	0.5	0.5	0.8	3.5	0.15	0.6	1.4	6.5
25 ml	250 µl ... 25 ml	10 µl	0.5	0.5	0.6	3.0	0.15	0.3	1.0	6.0
50 ml	500 µl ... 50 ml	10 µl	0.5	0.5	0.5	3.0	0.15	0.4	1.2	9.0

20.2 Limitations of use

Operating range *)	15 °C ... 40 °C (59 °F ... 104 °F)
Vapor pressure	Up to 500 mbar
Viscosity	20 mPa s at 50 ml PD-Tip 260 mPa s at 5 ml PD-Tip 977 mPa s at 1.25 ml PD-Tip

*) Additional temperatures upon request

20.3 Materials used

Device	PC/PBT, PP, silicone, glass, PEEK
Tips/flasks	PE/PP (size 0.1 mm LCP/PP)

20.4 Battery

Type	Li-ion battery
Capacity	1650 mAh
Voltage	3.7 V
Power	6.11 Wh
Storage	0 °C ... 35 °C
Charging time	Approx. 6 h. depending on whether the device is charged by the power adapter or the charging stand.
Weight	40 g

20.5 Charging Stand

Input	DC 5.0 V ⎓ 1.4 A, 7.0 W
Transmission	3.5 W, 110 kHz ... 205 kHz

20.6 Universal power adapter

Input	AC 100 ... 240 V ~ 50 Hz/60 Hz, 0.5 A
Output	DC 5.0 V ⎓ 1.4 A, 7.0 W

20.7 Markings on the product and the battery

Marking	Meaning
CE	With this mark, we confirm that the product complies with the requirements set out in the EC Directives and has been subjected to the specified testing procedures.
UKCA	UKCA: United Kingdom Conformity Assessed With this mark we confirm that the product complies with the requirements specified in the UK Designated Standards.
DE-M 21	The device is marked in accordance with the German Weights and Measures Act and the Weights and Measures Ordinance. Character sequence DE-M (DE for Germany), framed by a rectangle, as well as the two last digits of the year the marking was added.
XXFFFFF	Serial number
	Observe the information provided on the device, the accessories and in the operating instructions.
	Read the user manual.

Marking	Meaning
	The device or the battery should be disposed of properly.
 (here: 40 years)	China RoHS (EFUP) EFUP defines the period in years during which the hazardous substances contained in electrical and electronic equipment do not leak or change under normal operating conditions. Under normal use by the user, such electrical and electronic products do not cause severe environmental pollution, serious personal injury or damage to the user's property.
⎓	DC voltage
~	AC voltage
	Only suitable for indoor operation
	Device is completely protected by double insulation or reinforced insulation.
	The electrical device must not be disposed of with the household waste.
2ATKA-HST7052X0 2ATKA-HSTC705220	Certification number USA FCC
IC: 25139-HSTC705220 HVIN: HW_HSTC01.00	Certification number Canada ISED

21 Ordering Information

https://shop.brand.de/en/

21.1 Devices

Description	Illustration	Order number
HandyStep® touch, universal holder, universal power adapter, country adapter, Li-ion battery		705200
HandyStep® touch S, universal holder, universal power adapter, country adapter, Li-ion battery		705210

21.2 Accessories

Designation	Figure	Ordering No.
Charging stand (worldwide except India)		705220
Charging stand (India)		705223

Designation	Figure	Ordering No.
Support stand		705230
Lithium-ion battery for HandyStep® touch and HandyStep® touch S		705225
Universal holder for HandyStep® touch HandyStep® touch S		705235
Universal AC Adapter HandyStep® touch and HandyStep® touch S incl. charging cable and country adapters		705250
Bundle HandyStep® touch with charging stand worldwide (except for India)		705201

Designation	Figure	Ordering No.
Bundle HandyStep® touch S with charging stand worldwide (except for India)		705211
Bundle HandyStep® touch with charging stand for India		705203
Bundle HandyStep® touch S with charging stand for India		705213

21.3 Consumables

21.3.1 PD-Tips II (precision dispenser tips II)

The device automatically recognizes the coded tips.

Volume [ml]	Order No.	Packing unit [pcs.]	Order No. BIO-CERT® LIQUID HANDLING STERILE	Packing unit [pcs.]
0.1	705700	100	705730	100
0.5	705702	100	705732	100
1	705704	100	705734	100
1.25	705706	100	705736	100
2.5	705708	100	705738	100
5	705710	100	705740	100
10	705712	100	705742	100
12.5	705714	100	705744	100
25	705716	25+1 Adapter	705746	25+1 Adapter
50	705718	50+1 Adapter	705748	25+1 Adapter
Set PD-Tips II 0,5 ml ... 12.5 ml	705720	per 20	—	—

21.3.2 Adapter for 25 ml and 50 ml PD tips II

Volume [ml]	Order No.	Packaging unit	Property
25 ml and 50 ml	702398	10	
25 ml and 50 ml	702399	5	BIO-CERT® LIQUID HANDLING STERILE

22 Repairs

22.1 Sending for repair

NOTICE

Transporting of hazardous materials without a permit is a violation of federal law.

Clean the instrument thoroughly and decontaminate!

- When returning products, please enclose a general description of the type of malfunction and the media used. If information regarding media used is missing, the instrument cannot be repaired.
- Only send the device without a battery installed.
- Shipment is at the risk and the cost of the sender.

Outside USA and Canada

Complete the “Declaration on Absence of Health Hazards” and send the instrument to the manufacturer or supplier. Ask your supplier or manufacturer for the form. The form can also be downloaded from www.brand.de.

Outside USA and Canada

Please clarify the requirements for the return delivery with BrandTech Scientific, Inc **before** sending the instrument in for service.

Return only cleaned and decontaminated instruments to the address provided with the Return Authorization Number. Place the Return Authorization number so that it is clearly visible on the outside of the package.

Contact addresses

Germany:
BRAND GMBH + CO KG
Otto-Schott-Straße 25
97877 Wertheim (Germany)
T +49 9342 808 0
F +49 9342 808 98000
info@brand.de
www.brand.de

USA and Canada:
BrandTech® Scientific, Inc.
11 Bokum Road
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info@brandtech.com
www.brandtech.com

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www.brand.co.in

info@brand.com.cn
www.brand.cn.com

23 Calibration service

The ISO 9001 and GLP guidelines require regular inspection of your volume measuring devices. We recommend performing a volume check every 3 to 12 months. The cycle is dependent on the individual requirements of the device. Checks should be performed more frequently, in case of high frequency of use or the use of aggressive media.

The complete SOP for testing can be downloaded from www.brand.de or www.brandtech.com.

BRAND also offers you the option of having your devices calibrated through our factory calibration service or through our accredited calibration laboratory. Just send us the devices to be calibrated, indicating the type of calibration you would like. You will get your devices back in a few days. A detailed calibration report (factory calibration) or an accredited calibration certificate in accordance with DIN EN ISO/IEC 17025 is enclosed with each device. More information can be obtained from your retailer or directly from BRAND. The order document is available for download at www.brand.de (Service & Support).

For customers outside Germany

If you would like to use our calibration service, please contact one of our service partners in your region. Our service partners can forward your devices to BRAND for factory calibration, if required.

24 Information about your laboratory instrument

The online service MyProduct (https://www.brand.de/myproduct) offers quality certificates, equipment and technical documentation for your instrument HandyStep® touch. When entering serial or article numbers you attain information to your individual instrument.

Furthermore you will find a data matrix code on some devices (Transferpette® S, HandyStep® touch as well as HandyStep touch® S). Scan the data matrix code with an usual reading app to call up the information via URL https://www.brand.de/myproduct.

25 Warranty

We shall not be liable for the consequences of improper handling, use, servicing, operating or unauthorized repairs of the device or for the consequences of normal wear and tear, especially of wearing parts such as pistons, seals, valves and the breakage of glass. The same applies for failure to follow the instructions of the operating manual. We are not liable for damage resulting from disassembly beyond that described in the operating manual or if non-original spare parts or components have been installed.

USA and Canada:

Find more warranty information on www.brandtech.com.

26 Disposal

This symbol means that at the end of their service life, batteries/accumulators and electronic devices must be disposed of separately from household waste (unsorted municipal waste).

Electronic devices must be disposed of in accordance with Directive 2012/19/ EU of the European Parliament and of the Council from July 04, 2012 on waste from electrical and electronic equipment and in compliance with national disposal regulations.

Both batteries and accumulators (rechargeable batteries) contain materials that can be damaging to the environment and human health. Therefore, they must be properly disposed of in accordance with Directive 2006/66/EC of the European Parliament and of the Council from September 06, 2006 on batteries and accumulators and in compliance with national disposal regulations. Only dispose of fully discharged batteries and accumulators.

26.1 Battery disposal

⚠ WARNING

Possible risk of explosion and fire due to overheated battery.
Do not discharge the battery by short-circuiting.

- Wrap tape around the plug in order to prevent short-circuiting during disposal.
- Never disassemble the battery.