Instructions for Use
Electronic Micropipette

English

CONTENTS

1. General information
2. Scope of delivery
3. Technical specifications
4. Before using the first time
5. Start up
6. Controls and displays
7. Program / menu selection
8. Autoclavability
9. International standards and regulations
10. Queries, ordering replacement parts and services

1. General Information

The new Electronic Micropipette has been developed to replace conventional, manual mechanical pipettes. Being highly precise in their application and simple to operate, one can select between various operating programs which will be described in more detail on the following pages. Advantages that the new Electronic Micropipette consists of are as follows:

- High-tech precision with regard to pipetting and dispensing
- Various operating programs
- Adjustable dosing and aspiration speed rates
- Changeable battery of long durability
- Ergonomic design for stressless work flow

2. Scope of delivery

The following components are included in the scope of delivery of a new Electronic Micropipette:

One Electronic Micropipette
One battery charger
One rechargeable battery
One multilingual user manual
One calibration certificate
One screwdriver
One sample bag of pipette tips

3. Technical Specification

AHN Electronic Pipette Technical Specification	
Ambient Conditions	
Operating temperature	5˚ C to 40˚ C
Relative humidity during operation	10% to 95%
Storage temperature	-5˚ C to 45˚ C
Power Supply	
Type	Power Plug Adapter
Input Voltage	100V - 240V
Output Voltage	5V
Current	1A
Frequency	50/60 Hz
Rechargeable Battery	
Type	Lithium ion rechargeable battery
Rated Capacity	1600mAh
Nominal Voltage	3.6 V
Charging Time	3~4 hrs
Altitude	Use up to an altitude of 2000 m above MSL
Pollution Degree	2
Environment	For indoor use only

4. Before using the first time

Before using the first time, insert the rechargeable battery into your new Electronic Pipette. In order to do so, remove the coloured handle. Now you can see the battery case of your pipette. Now insert the included rechargeable battery into the battery case. Please pay attention to the correct position of the positive and negative poles (+/-) of the battery. The poles are appropriately marked as (+) and (–). After that, lock in the coloured handle again and fix it with the cross screw.

First, make sure that the battery charger is conform to your power mains and that the plug and socket have a corresponding system. Next, recharge your new Electronic Pipette completely. For this, the battery charger has to be connected to the front terminal in the display part of the pipette and then plugged in to the socket. It is advisable to recharge your new Electronic Micropipette completely for at least 8 hours.

5. Start up

You can switch your new Electronic Pipette ON / OFF by using the small slide switch at the side. The display will start flashing for a few seconds. The programs of your new Electronic Pipette will be activated.

Next, the pictogram for the „pipetting program“appears automatically. Use the control button (Jog-Dial) to enter the pipetting program or to select a different program. If the pipette is switched off (ON / OFF), selected programs and settings are reset again. If the current program is to be maintained, do not switch off (ON / OFF) the pipette.

Your new Electronic Pipette has a standby-modus. If the switched on pipette is not used for 60 seconds, it will switch automatically into the battery-saving standby-modus. You will get back to your previously used program by shortly pressing the control button (Jog-Dial).

6. Controls and displays

6.1 Jog-Dial system

The newly developed 1-button-operating system, Jog-Dial, of your new Electronic Micropipette is unique and patented. A turning motion of the Jog-Dial allows you to proceed in the menu or the program selection, e. g. volume selection. Pressing the Jog-Dial confirms your selection or entry. Please remember the following abbreviations for understanding these instructions for use:

LP	Control button (Jog-Dial) : LONG PRESS (approx. 400 mili seconds) to confirm (Enter) and exit program entry.
SP	Control button (Jog-Dial): SHORT PRESS (less than 200 mili seconds) to enter volume, subsets and to activate operating functions.

6.2 Display for battery charge level

Your new Electronic Micropipette is equipped with a highly-accurate display which is a high-grade OLED-display.

After switching your new Electronic Micropipette on (ON / OFF switch), the battery charge level will be permanently displayed.

Full
75%
50%
25%
Flat

Low battery symbol 

6.3 Volume selection

The selected volume is displayed digitally in „µl“. After a program selection, the highest selectable volume will be displayed, e. g. a variable volume of 10-200 µl:

„200“

Using the Jog-Dial, the grey shaded numbers can either be increased or decreased by a short turning click (to the left = decreased / to the right = increased) If the subset is correct, confirm with SP (SHORT PRESS) and the next subset will be shaded in grey and can be altered appropriately. The gradual alteration of the subsets is effected in the specified splits of the different volume ranges. If the desired volume is achieved in this way, confirm and select the total volume with LP (LONG PRESS).

6.4 Pipetting program

This modus is displayed by the following pictogram: 

6.5 Reverse pipetting program

This modus is displayed by the following pictogram: 

6.6 Mixing /ELISA washing program

This modus is displayed by the following pictogram: 

6.7 Dispensing program

This modus is displayed by the following pictogram: 

6.8 Speed setting

This modus is displayed by the following pictogram: 

6.9 Auto-calibration program

Pipette is receptive if the following pictogram is displayed: 

6.10 Other displays

This modus is displayed by the following pictogram: 

Pipette is ready to dispense if the following pictogram is displayed: 

User Calibration symbol 

7. Program / menu selection

Control button/Jog Dial	ASSOCIATED ACTIVITY
LP (LONG PRESS)	Final selection, enter and exit the appropriate menu
SP (SHORT PRESS)	Skip to next number / next step of the program
Turn to right	Change of modus / volume increase / increase of meter
Turn to left	Change of modus / volume increase / increase of meter

7.1 Pipetting program

In the pipetting modus, a freely selected volume within the volume range of the pipette is drawn up and is accurately pipetted by the automatic Blow-Out (fast blow out at the volume tip).

Operating steps in the pipetting modus:

Pipetting modus	▸	LP (LONG PRESS) Jog-Dial to enter volume (Enter)
Volume selection	▸	Setting of grey shaded number by turning the Jog-Dial
Volume selection	▸	Change to next subset with SP (SHORT PRESS) Jog Dial
Volume entering	▸	LP (LONG PRESS) Jog-Dial to finalize volume (Enter)
Draw up of samples	▸	SP (SHORT PRESS) Jog-Dial
Dispersion of samples	▸	SP (SHORT PRESS) Jog-Dial (automatic Blow-Out)

7.2 Program reverse pipetting

The modus reverse-pipetting is a special pipetting program. The automatic draw up of an additional volume which is separately rejected at the end of the pipetting procedure, allows foamy and particularly viscose liquids to be pipetted precisely and accurately.

Operating steps in the modus reverse-pipetting:

Reverse modus	▸	LP (LONG PRESS) Jog-Dial to enter volume (Enter)
Volume selection	▸	Setting of grey shaded number by turning the Jog-Dial
Volume selection	▸	Change to next subset with SP (SHORT PRESS) Jog Dial
Volume entering	▸	LP (LONG PRESS) Jog-Dial to finalize volume (Enter)
Draw up of samples	▸	SP (SHORT PRESS) Jog-Dial volume plus additional volume
Dispensing of samples	▸	SP (SHORT PRESS) Jog-Dial
Additional volume	▸	“0” on Display - SP (SHORT PRESS) Jog-Dial to reject additional volume

7.3 Program mixing / ELISA washing

The mixing modus allows to draw up and automatically dispense again a freely selectable sample volume. This procedure is repeated for 10 times continuously. Although user can interrupt/stop this process in between by clicking SP Jog-dial. It will discard all the liquid from the tip. This program is also suitable for ELISA-washing.

Operating steps in the modus mixing / washing:

Mixing / washing modus	▸ LP (LONG PRESS) Jog-Dial to enter volume (Enter)
Volume selection	▸ Setting of grey shaded number by turning the Jog-Dial
Volume selection	▸ Change to next subset with SP (SHORT PRESS) Jog Dial
Volume entering	▸ LP (LONG PRESS) Jog-Dial to finalize volume (Enter)
SP Jog-Dial	▸ Ten-time automatic draw up and dispensing of the volume
SP Jog-Dial	▸ SP(SHORT PRESS) to interrupt / stop in between the process

7.4 Dispensing Program

The dispensing modus allows to select a dispensing volume which can, in freely selectable subsets, be individually pipetted again. The total draw up capacity is calculated automatically from the numbers of subsets and from the single subset volume. The subset volume and the number of subsets are automatically limited through the calculatory total volume of the pipette alone.

Operating step in the dispensing modus:

Dispensing modus	▸ LP (LONG PRESS) Jog-Dial to enter volume (Enter)
Subset volume selection	▸ Setting of grey shaded number by turning the Jog-Dial
Subset volume selection	▸ Change to next subset with SP (SHORT PRESS) Jog-Dial
Subset volume selection	▸ LP (LONG PRESS) Jog-Dial to finalize volume (Enter)
Dispensing step selection	▸ SP (LONG PRESS) Jog-Dial to enter dispensing step
SP Jog-Dial	▸ Draw up of the total volume (subsets x single volume)
SP Jog-Dial	▸ Dispensing of single dispensing volume, the remaining number of subsets is shown on display
Additional volume	▸ “0" on Display - SP (SHORT PRESS) Jog-Dial to reject additional volume

7.5 Speed rate setting program

The speed rate modus allows to check and adjust the speed of the piston stroke travel and thus the pipetting or dispensing speed. That means the piston stroke travel of the pipette can be adapted to the different viscosities of their sample volumes. The level to be selected ranges from 1 to 3 (3 being the fastest speed rate).

Operating steps in the speed modus:

Speed modus	▸	LP (LONG PRESS) to enter speed (Enter)
Speed selection	▸	Setting of number by turning the Jog-Dial
Speed confirming	▸	LP (LONG PRESS) Jog-Dial to confirm speed (Enter)

7.6 Auto calibration program

The original setting of your new Electronic Pipette is calibrated at „EX“ based upon the appropriate nominal volume. The factory calibration has been effected in the environmental condition instructed in EN ISO 8655-6 documents. Distilled water, of quality level 3, in compliance with ISO 3696 has been used as reference liquid. The working standard calibrations have been derived from the national standards valid for the Federal Republic of Germany and are in compliance with the Physikalisch Technische Bundesanstalt (PTB) (Federal Institute of Physics and Metrology).

There are 2 calibration variations available in the autocalibration program, the user calibration (regular operation process) and the factory calibration.

User calibration:

1. Regular process of calibration. Enter the values for „T" (test volume) and „R” (resulting volume). Then confirm with LP (LONG PRESS). The „✓“ symbol displays that the modification has been successful.

2. To reset the user calibration, enter the given values for „T" and „R" in the calibration modus (i. e. no alterations). Then confirm with LP (LONG PRESS). The „ ✓ “ symbol displays that the user calibration has been reset to the factory calibration setting.

3. For the 2nd time modification in the user calibration setting, the user calibration must set to zero (e.g. perform step 2 first before modifying the user calibration once again) if factory calibration has modified once by applying user calibration method.

Factory calibration:

The factory calibration can only be made at the factory or by a certified calibration laboratory.

Operation steps in the autocalibration modus: 

Calibration modus	▸	LP (LONG PRESS) Jog-Dial to enter
Volume selection „T“	▸	Setting of grey shaded number by turning the Jog-Dial
Volume selection „T“	▸	Change to next subset with SP (SHORT PRESS) Jog-Dial
Volume selection „T“	▸	LP (LONG PRESS) Jog-Dial to enter volume
Volume selection „R“	▸	Setting of grey shaded number by turning the Jog-Dial
Volume selection „R“	▸	Change to next subset with SP (SHORT PRESS) Jog-Dial
Volume entering „R”	▸	LP (LONG PRESS) Jog-Dial to enter volume

Please note: The test volume („T“) was volume 1 and the resulting volume („R“) was volume 2. To reset the calibration, enter the same values for the „T" and „R" volume. Now the pipette is calibrated and such increases / decreases its draw up capacity through calculation.

Special Note : Calibration must be done at 10% of the maximum volume:

Volume Range (µl) – Single Channel	Calibration Point
0.2-10	1
5-100	10
10-200	20
50-1000	100
100-5000	500

Volume Range (µl) – Multi Channel	Calibration Point
0.2-10	1
1-20	2
2.5-50	5
5-100	10
10-200	20
15-300	30

8. Autoclavability

The complete pipette tip cone with ejector tube can be fully autoclaved upon the following conditions:

Caution: Handle, motor component and display area of the pipette cannot be autoclaved

Temperature:	120°C / 250° Fahrenheit
Pressure:	1.05 bar / 15 psig (Pounds)
Time:	15 minutes or less

Caution: When exceeding these values, the pipette can be demolished!

Hot-air sterilization of the pipette tip cone which is effective at 160°C is not possible. However, vapour sterilization using ethylene oxide or formaldehyde is possible without any problems. After vapour sterilization the pipette tip cone should be aerated sufficiently. Chemical decontamination of the pipette using ordinary disinfection agents (e.g. quaternary ammonium or formalin) is also possible. The pipette should be checked and calibrated (see autocalibration) in accordance with ISO 8655 or any adequate testing procedure after every sterilization procedure.

9. International standards and regulations

Your new Electronic Pipette meets the following standards and regulations:

International Organisation for Standardisation:	ISO 8655, part 1-6
European Committee for Standardisation:	EN ISO 8655
Safety requirements for electrical equipment for measurement, control and laboratory use:	IEC 61010-1
Electrical equipment for measurement, control and laboratory use:	IEC 61326-1
Basic Safety principles for man-machine interface, marking and identification:	IEC 60073
Certificates of conformity:	DIN 12600

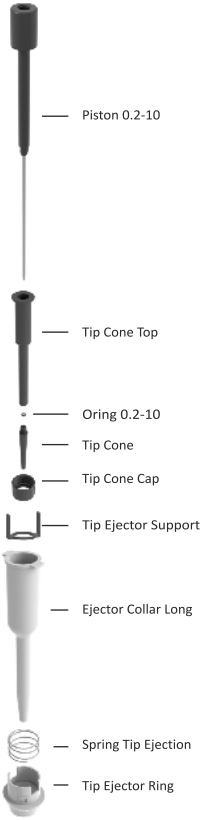
The working standard calibrations have been derived from the national standards valid for the Federal Republic of Germany and are in compliance with the Physikalisch Technische Bundesanstalt (PTB) (Federal Institute of Physics and Metrology).

10. Queries, ordering replacement parts and services

Please place any further queries and obtain further information on the use of your new Electronic Pipette from your supplier. Any possibly necessary replacement parts (e. g. batteries etc.) or services can easily be requested from your local supplier or dealer.

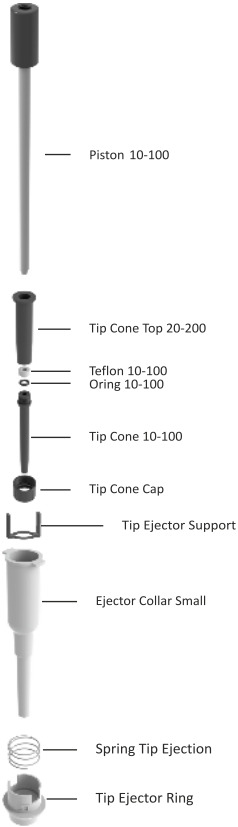
Exploded Diagram

0.2-10µl



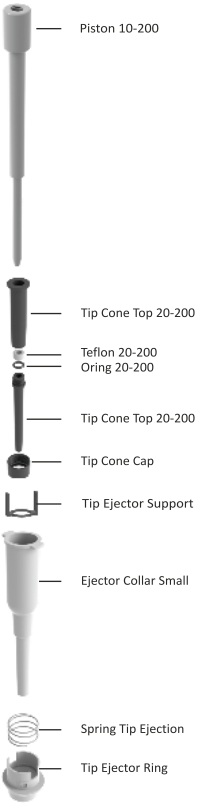
Exploded Diagram

5-100µl



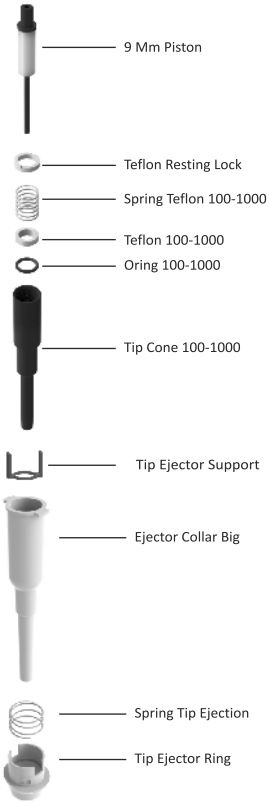
Exploded Diagram

10-200µl



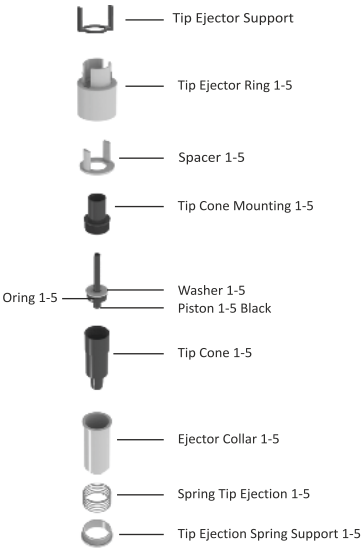
Exploded Diagram

50-1000µl



Exploded Diagram

100-5000µl



Common Spares

— Battery

— charger

— Grip

— Screw

— Rotating Button