

Auto Lensmeter

User's Manual



Please read this manual carefully before using the instrument and keep it handy for reference.

Thank you for your confidence in our company and the selection of our products.

The manufacturer has the copyright of this non - public publication manual and has the right to treat it as confidential data. This manual serves as a reference for the operation, maintenance and repair of the picture product contained in this manual.

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WARNING:

The manufacturer does not provide any form of guarantee for this manual, including (but not limited to) the implied marketability and suitability of the guarantee for a particular purpose. The manufacturer is not liable for the errors contained in this manual or incidental or indirect damages caused by the provision, actual performance and use of this manual. The manufacturer reserves the right to make changes in its products or product specifications at any time without prior notice.

This product may malfunction due to electromagnetic wave caused by portable personal telephones, transceivers and radio-controlled toys.

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1. Introduction

1.1 Overview

This device is a precise instrument which uses Hartmann array principle, combines precise image analysis and processing technology, and can measure all kinds of lenses. It is used to measure the spherical lens, cylindrical power, axis of astigmatism, the frame lenses PD and PH values, and provide the reference data for glasses making. The measurement data can be displayed on the screen, or press the print key to print the data directly.

1.2 Classification

1.2.1 Classification of product: Class I

1.2.2 Resistance against electric shock: Class I (earthed)

1.2.3 Protection class against electric: Type B

1.2.4 Protection against harmful ingress of water: Ordinary

1.2.5 Security environment: Not suitable for use in the presence of a flammable anesthetics mixture with air or with oxygen or with nitrous oxide

1.2.6 Mode of operation: continuous

2. Safety Information

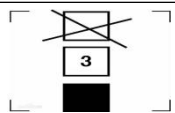
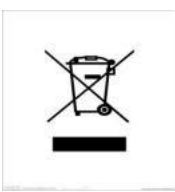
2.1 Overview

Safety is everyone's responsibility. The safe use of this instrument is largely dependent upon the installer, user, operator, and maintainer. It is imperative that personnel study and become familiar with this entire manual before attempting to install use, clean, service or adjust this equipment and any associated accessories. It is paramount that the instructions contained in this manual are fully understood and followed to enhance safety to the user/operator. It is for this reason that the following safety notices have been placed appropriately within the text of this manual to highlight safety related information or information requiring special emphasis. All users, operators, and maintainers must be familiar with and pay particular attention to all Warnings and Cautions incorporated herein.

2.2 Safety symbol

The International Electrotechnical Commission (IEC) has established a set of symbols for medical electronic equipment which classify a connection or warn of any potential hazards. The classifications and symbols are shown below.

Safety Symbol

	Power On/Off
	Safety note. Ensure you understand the function of this control before using it.
	The year of manufacture and manufacturer
	Manufacturer
	Handle with care
	Identifies the point where the system safety ground is fastened to the chassis
	Temperature Limitation
	Keep DRY
	Stacked three
	Disposal of your old appliance: the correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
	Fuse

2.3 Environmental considerations

2.3.1 This instrument must not be used in an area that is in danger of explosions and in the presence of flammable, explosive, or volatile solvent such as alcohol, benzene or similar chemicals. It can only be used indoors.

2.3.2 The device should neither be kept nor installed in the place with high humidity or too much dust. The machine should not be exposed to the place where water splashes, drips or sprays. Don't place containers containing fluids, liquids, or gases on the top of the instrument.

2.3.3 Make sure to store the instrument in a place away from direct sunlight with the specified temperature and humidity. The environmental parameters for storage and use are as follows:

- Temperature: (5~40)°C(in usage) , (-20~60)°C(in storage/transference)
- Humidity: (30~85)%(non-condensing)(in usage), (10~95)%(in storage/transference)
- Atmospheric pressure: (700~1060) hpa
- Altitude : (0~2000) m

2.4 Safety precaution

This instrument has been developed and tested in conformity with domestic and international safety standards and regulations, which guarantees the high stability, safety and effectiveness of this product. The correct handling of this instrument is imperative for its safe operation, therefore, please read carefully all instructions before switching on the machine. For more detailed information, please contact our Customer Service Department or our authorized representatives.

2.4.1 Precaution items

Please visually inspect the appearance of the equipment before each use of the instrument to ensure everything is ok.

1. Don't personally modify and touch the inside parts of the instrument, it may cause an electric shock or the system may malfunction.
2. Don't press the function buttons too hard, it may damage the touch screen or buttons.
3. Be sure to use the standard electrical current. If the supplied voltage is too high or too low, the instrument may not work sufficiently, may malfunction or cause an electric shock.

4. If the metal core of the power cord is exposed, replace the cord immediately. It may cause an electric shock or a fire.
5. If you encounter any abnormal conditions, such as smoking or strange smells, turn off the instrument and pull out the power cord immediately. Contact the local experts/agent or original manufacturer to check and repair, you can use till the trouble is absolutely solved. If the instrument is used under abnormal condition, it may cause an electric shock or a fire.

2.4.2 In transference

Never lift lensmeter with the parts of LCD. To carry the instrument, hold it from the backside with both hands on its base. Otherwise, it may cause damage on the instrument.

2.4.3 After use

If the instrument won't be used for a long time, disconnect the power cable from the wall-outlet. It may cause a fire.

When the instrument is not used, turn off the power, and put on the dust cover. Keeping the machine in electricity supplying will reduce the use life of the instrument. If the instrument is not covered for a long time, dust may affect the measurement accuracy.

2.4.4 Connection precaution items

External equipment intended for connection to signal input, signal output or other connectors, shall comply with relevant safety standard (e.g., the IT equipment for medical electrical equipment and IEC60601-1 series for IEC60950). If in doubt, contact qualified technician or your local representative.

3. Characteristics

3.1 Green LED light source, ABBE compensation not required

3.2 Automatically determines and measures various lenses, quickly locates long distance center and near distance center of progressive lens, and achieves precise measurement of various regional parameters in the effective range (such as lens for high refractive index, polarized, sunglasses, progressive and scratched...).

3.3 Frame PD & PH Measurement: the digital PD ruler is displayed on screen, which quickly measures the mounted frame PD and PH values.

3.4 7.0-inch HD touch color LCD display

3.5 Measurable transmittance: $> 10\%$, $> 20\%$ at $\pm 10D$ and over

3.6 Main Specifications

Sphere: $(0 \sim \pm 35) \text{ m}^{-1}$ ($0.01 \text{ m}^{-1}/0.06 \text{ m}^{-1}/0.12 \text{ m}^{-1}/0.25 \text{ m}^{-1}$ steps)

Measurement Range		Accuracy
$0 \text{ m}^{-1}, \geq -5 \text{ m}^{-1}$	$0 \text{ m}^{-1}, \leq +5 \text{ m}^{-1}$	$\pm 0.06 \text{ m}^{-1}$
$< -5 \text{ m}^{-1}, \geq -10 \text{ m}^{-1}$	$> +5 \text{ m}^{-1}, \leq +10 \text{ m}^{-1}$	$\pm 0.09 \text{ m}^{-1}$
$< -10 \text{ m}^{-1}, \geq -15 \text{ m}^{-1}$	$> +10 \text{ m}^{-1}, \leq +15 \text{ m}^{-1}$	$\pm 0.12 \text{ m}^{-1}$
$< -15 \text{ m}^{-1}, \geq -20 \text{ m}^{-1}$	$> +15 \text{ m}^{-1}, \leq +20 \text{ m}^{-1}$	$\pm 0.18 \text{ m}^{-1}$
$< -20 \text{ m}^{-1}, \geq -35 \text{ m}^{-1}$	$> +20 \text{ m}^{-1}, \leq +35 \text{ m}^{-1}$	$\pm 0.25 \text{ m}^{-1}$

Cylinder: $(0 \sim \pm 10) \text{ m}^{-1}$ ($0.01 \text{ m}^{-1}/0.06 \text{ m}^{-1}/0.12 \text{ m}^{-1}/0.25 \text{ m}^{-1}$ steps)

Axis: $0^\circ \sim 180^\circ (1^\circ \text{ step})$

ADD: $(0 \sim 10) \text{ m}^{-1}$ ($0.01 \text{ m}^{-1}/0.06 \text{ m}^{-1}/0.12 \text{ m}^{-1}/0.25 \text{ m}^{-1}$ steps)

Prism: $0 \sim 15 \text{ cm/m}$ (0.01 cm/m)

Measurement Range	Accuracy
$0 \text{ cm/m}, \leq 5 \text{ cm/m}$	0.1 cm/m
$< 5 \text{ cm/m}, \leq 15 \text{ cm/m}$	0.2 cm/m

Remarks:

- 1) Cylinder mode: +, +/-, -
- 2) Prism mode: X-Y: Cartesian Coordinates H: I, O. V: U, D. P—B: Polar Coordinates mm: mm expression
- 3) Reading resolving power: $0.01 \text{ m}^{-1}/0.06 \text{ m}^{-1}/0.12 \text{ m}^{-1}/0.25 \text{ m}^{-1}$
- Contact lenses: $0 \sim \pm 25 \text{ m}^{-1}$ BC(6.00~9.00)mm
- 5) Lens diameter: 20mm-100mm

4. Note for Use

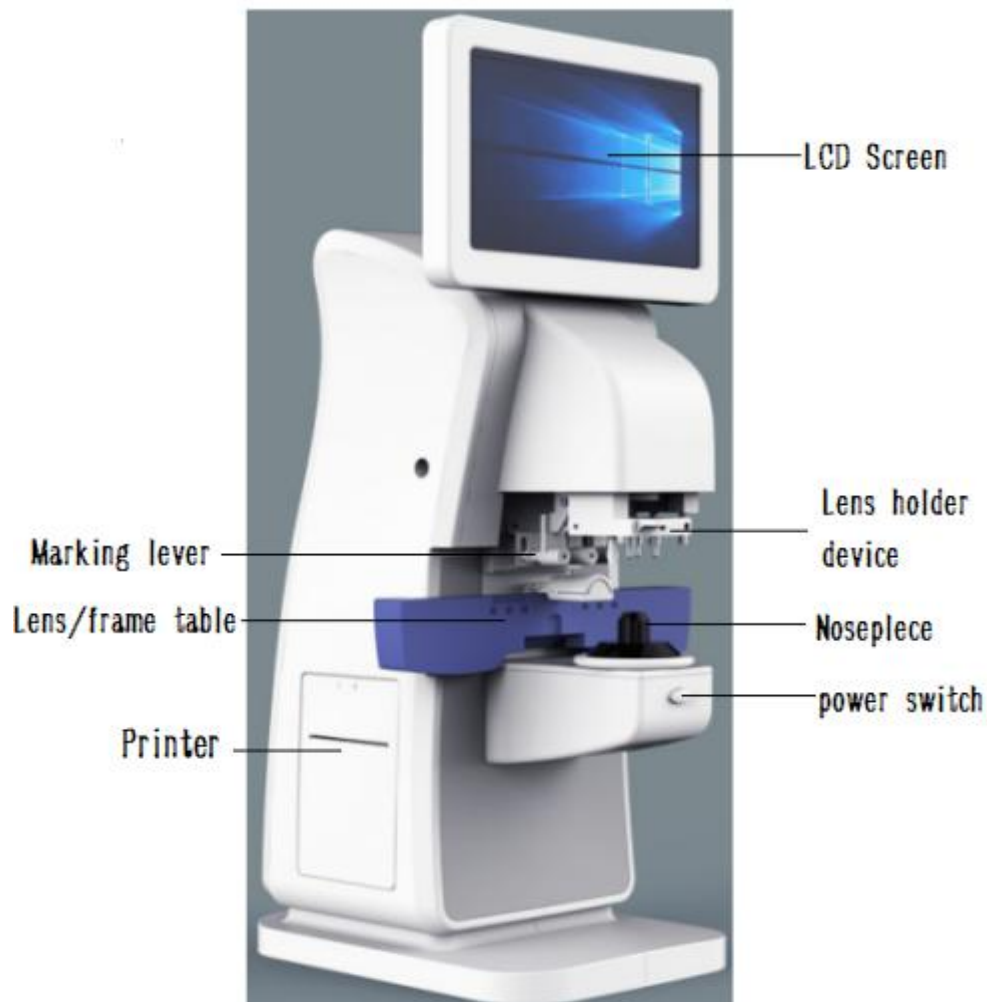
- 4.1 Don't hit or drop the instrument. The instrument may be damaged by the strong impact. The impact may damage the function of this instrument. Handle it with care.
- 4.2 The precision of measurement can be affected when the machine is exposed to the direct sunlight or too bright indoor illumination.
- 4.3 If you want to connect this device to other instrument, please follow the guidance of our local representative.
- 4.4 Sudden heating of the room in cold areas will cause condensation of vapor on the protective glass in the measurement window and on optical parts inside the instrument. In this case, wait till condensation disappears before performing measurement.
- 4.5 Make sure to keep the lens in examinee side is clean at all times. Dust can cause errors in the machine or affect the measurement accuracy.
- 4.6 Don't use organic solvents such as alcohol, thinner, benzene, etc, to clean the surface of the instrument, it may ruin the surface.

5. Installation of Equipment & Preparation of Measurement

- 5.1 Take out the instrument from the packing box, remove the packing bag, drying agent, nosepiece cover and dotting fixing block, and place it on the stable table.
- 5.2 Make sure the local power voltage matches the voltage indicated on the device, check that the power switch of the device is closed, insert the power cord into the socket at the bottom of the device and connect the power plug with the AC socket.
- 5.3 The device will automatically start the power-saving function within the prescribed operating time (screen appears clock), press any key to return.

6. Names and functions of each part

6.1 Main parts



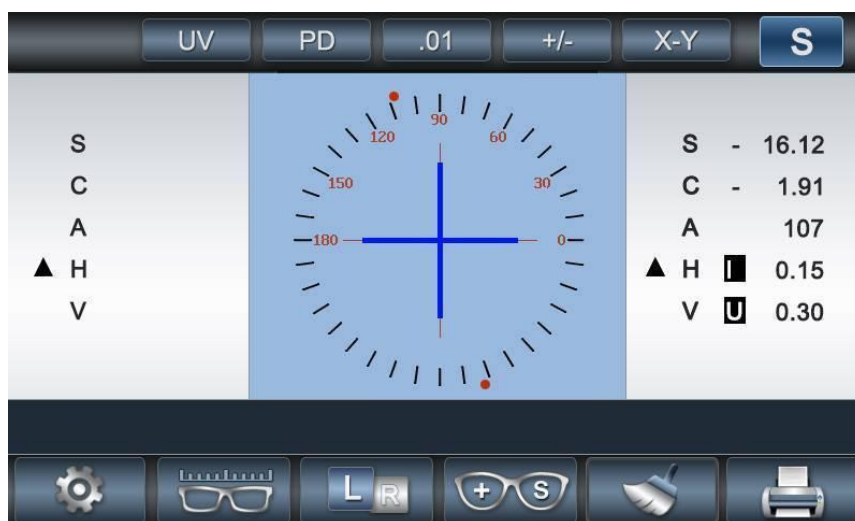
6.2 Menu

6.2.1 Screen display

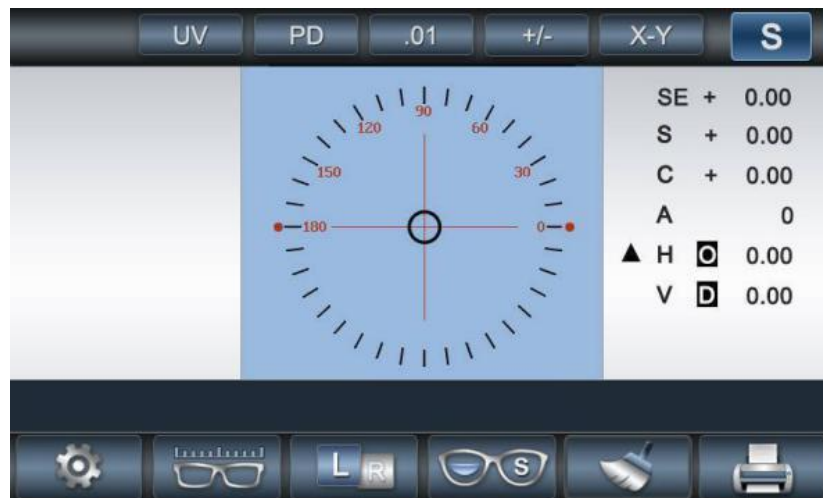


6.2.2 Interface mode display

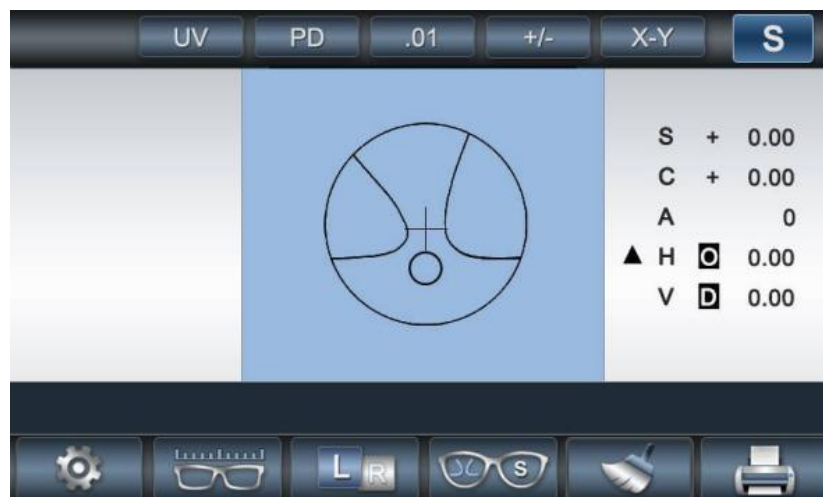
- 1)  general lens measurement mode



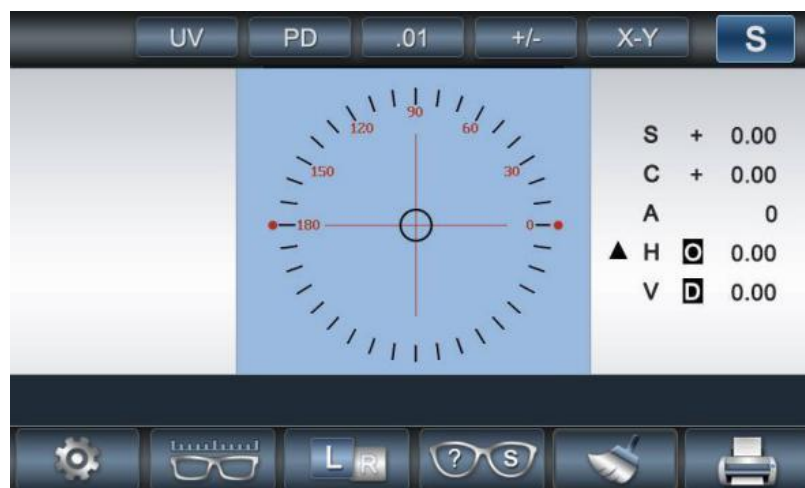
2) contact lens measurement mode



3) progressive lens measurement mode



4) automatic identification measurement mode



6.2.3 Menu



Menu List

- 1) SPH STEP: sphere lens steps ($0.01\text{m}^{-1}/0.06\text{m}^{-1}/0.12\text{m}^{-1}/0.25\text{m}^{-1}$)
- 2) CYL: cylinder lens mode (+, +/-, -)
- 3) CYL STEP: cylinder lens steps ($0.01\text{m}^{-1}/0.06\text{m}^{-1}/0.12\text{m}^{-1}/0.25\text{m}^{-1}$)
 - measures the residual cylinder power (less than 0.05m^{-1})
 - measures the low cylinder power (less than 0.25m^{-1})
 - mainly used for lens manufacturer or determining the lens quality grade
- 4) PRISM: P-B (polar coordinate), X-Y (Cartesian coordinate),
 - ΔHO : horizontal prism data (out), ΔHI : horizontal prism data (in),
 - ΔVD : vertical prism data (down), ΔVU : vertical prism data (up)
- 5) AUTO L/R: Automatically switches the left and right lens measurement. With this function, touch L key into the left lens measurement, after take out the lens, the interface will automatically go into the right lens measurement.
- 6) AUTO MEMORY: Automatically displays and stores the measured data
 - alignment ok: near center measurement (imprecise marking center dot)
 - marking ok: absolute center measurement (precise marking center dot)
- 7) LD AUTO MEM: Automatically measures and stores the values of the long distance area of progressive lens
- 8) ND AUTO MEM: Automatically measures and stores the values of the near distance area of progressive lens
- 9) ND INDICATOR: Arrows guide to move the lens left or right/up or down when measuring

the near distance area. If turn off this function, no guiding arrows appear during measuring

10) ND VALUE: Near distance power measurement

ADD VALUE: Separately measure the LD power and ADD value, the sum of the both values is the ND value

RDD VALUE: Directly measures the LD power and ND power (RDD value)

11) STARTING MODE: The interface display mode when turn on the machine

- AUTO mode: automatic identification interface when turn on the machine
- STANDARD mode: general lens measurement interface when turn on the machine
- PROGRESSIVE mode: progressive lens measurement interface when turn on the machine

12) PD measure: Measure and display the values of PD, LPD and RPD. When turn off this function, all PD values won't display

13) UV measure: Measure the lens ultraviolet transmittance

- **CONTRAST** mode: measure and contrast two or more lenses ultraviolet transmittance
- **SIMPLE** mode: directly display the UV transmittance value on the screen

Operating: Press the read button for 3 or 4 seconds, then loose hand, the UV transmittance value will display on the LUV or RUV value.

14) UV STEP: UV transmittance measurement precision choice

- 1%: value measured in 0.01 unit
- 5%: value measured in 0.05 unit

15) UV AUTO UPDATE: Automatically update the brightness environment to UV measurement per 5 minutes, 10 minutes, 20 minutes or 30

16) MARKING MODE: center target display mode(○, +)

17) LCD BRIGHTNESS: The LCD brightness setting

18) BEEP: Sound prompt during operating. If turned off, operation will keep silent.

19) STAND BY: Screen display automatically goes into the dormant condition per 5 minutes, 10 minutes, 30 minutes and 60 minutes. Press any key to start.

20) PRINT SET: Printing definition setting

21) DATE SET: Date setting, including year, month, day, hour, minute, second and week

22) PRINT DATE SET: The date display mode, including year-month-date, month-date-year, and date-month-year

23) DATE DISP: When set on, the date and time will display on the screen. When set off, it won't display the date and time on screen.

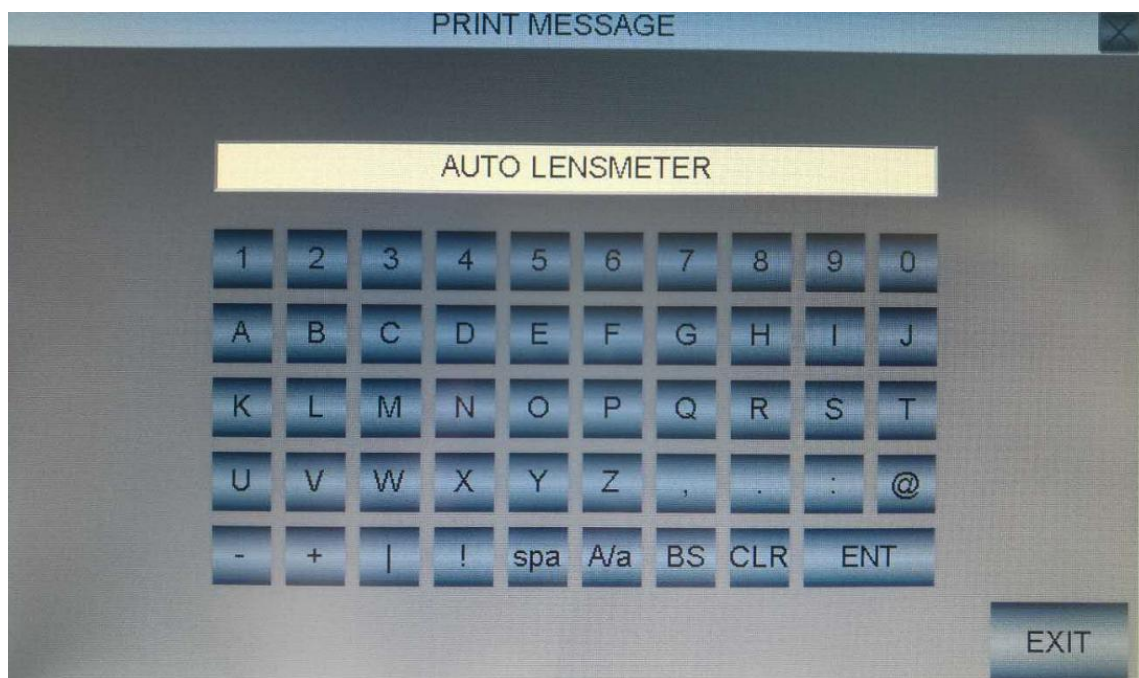
24) COMPANY NAME: Setting and printing the company information, including company name, address, telephone and fax number

Operating:

Press setting key to go into the company information setting interface.

Press the corresponding characters and numbers on the keyboard to select. If the character or number is selected wrong, press BS to clear the single character or number, and press CLR to clear all.

Press EXIT to return to the main menu



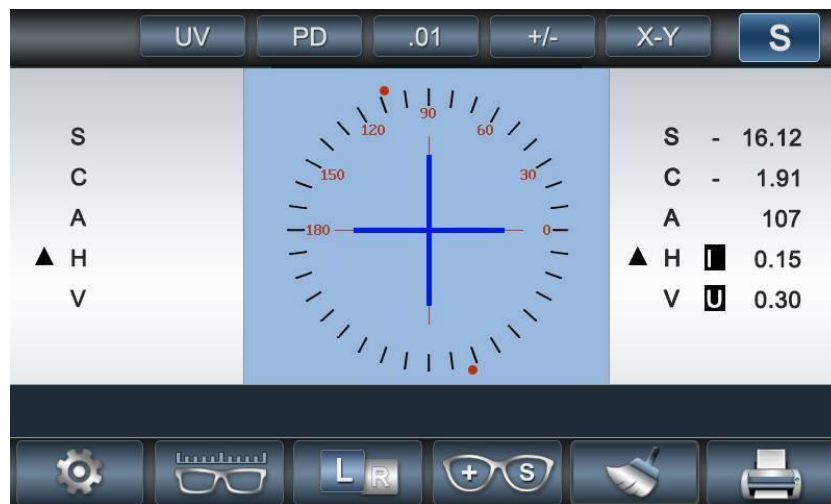
NAME PRINT:

When turn on this function, the printing paper will display the company name and other information

7.Measurement

7.1 Single vision lens measurement

No need to distinguish between the left and right lenses, the interface work status S is always displayed in the upper right corner of the screen.



If there is to distinguish between the left and right lenses, touch  key, L will appear in the upper left corner, R will appear in the upper right corner. If AUTO L/R on, when the left lens measurement is finished, the interface will automatically go into the right lens measurement status

7.2 The Mounted Lenses Measurement

- 1.) Put the left lens on the nosepiece with the convexity of the lens upwards and the top of the frame outwards
- 2.) Move the nose slider into the frame bridge
- 3.) Put down the lens holder and fix the left lens to measure
- 4.) Measure the right lens same as the left frame lens
- 5.) After the left and right frame lenses measurement is finished, it will display the frame PD, LPD and RPD



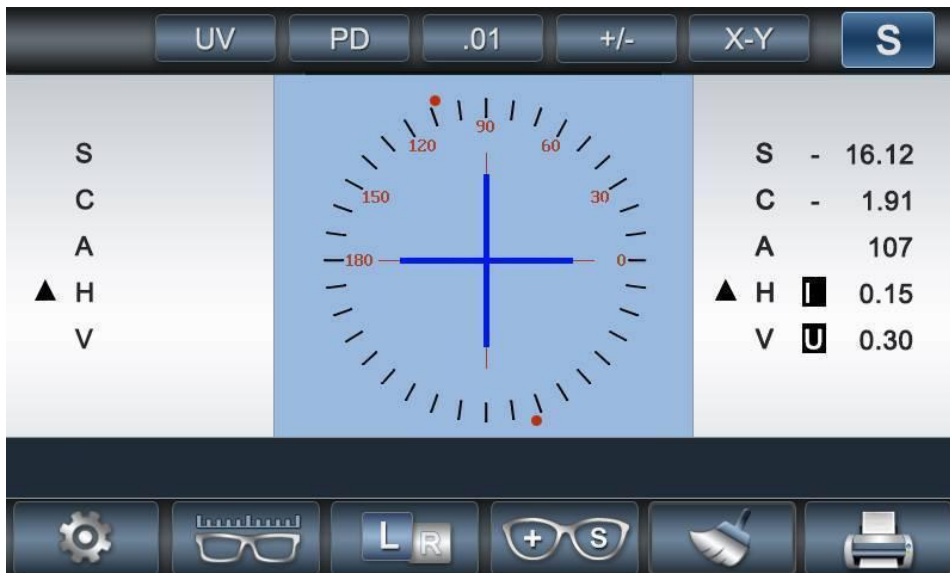
Frame lens measurement 1



Frame lens measurement 2

7.3 Bifocal and Trifocal Lenses Measurement

- 1) Switch to general lens measurement interface



- 2) Aim at the center of the upper vision area in lens, and measure

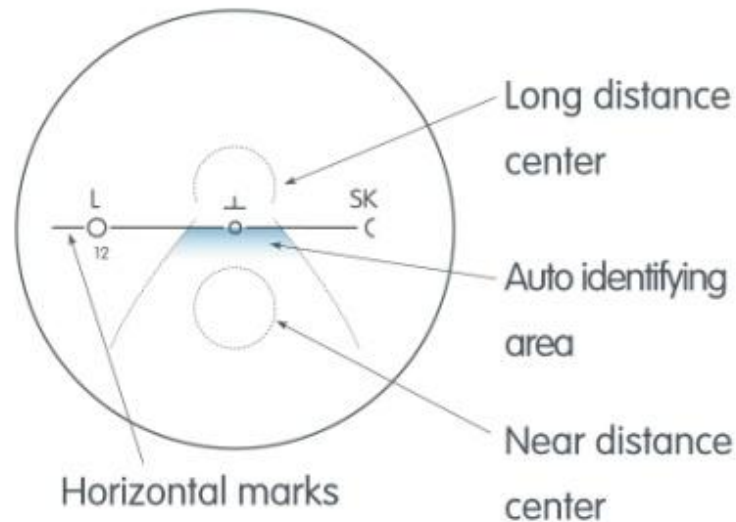


- 3) Touch **Add** key, aim at the center of the second vision area in lens, press the READ button and memory the Bifocal lens power
- 4) Touch **Add** key next, aim at the center of the third vision area in lens, press READ button and memory the Trifocal lens power

7.4 Progressive Lens Measurement

7.4.1 Uncut progressive lens measurement

Both LD and ND areas of the uncut progressive multi-focus lens are marked



- 1) ADD value measurement: Fix the lens on nosepiece, aim at the LD center mark (ADD1), it automatically memory the power (when set AUTO MEMORY off in menu, press the READ button to memory the power), after move the lens to the ND center mark and get the ADD value (ADD2).
- 2) RDD value measurement : Enter menu, select ND VAL (RDD1). First aim at the LD center mark (RDD2), it automatically memorizes the power (when set AUTO MEMORY off, press the READ button to memory the power), afterwards move the lens to the ND center mark and get the RDD value (RDD3). The RDD value is the ND power.





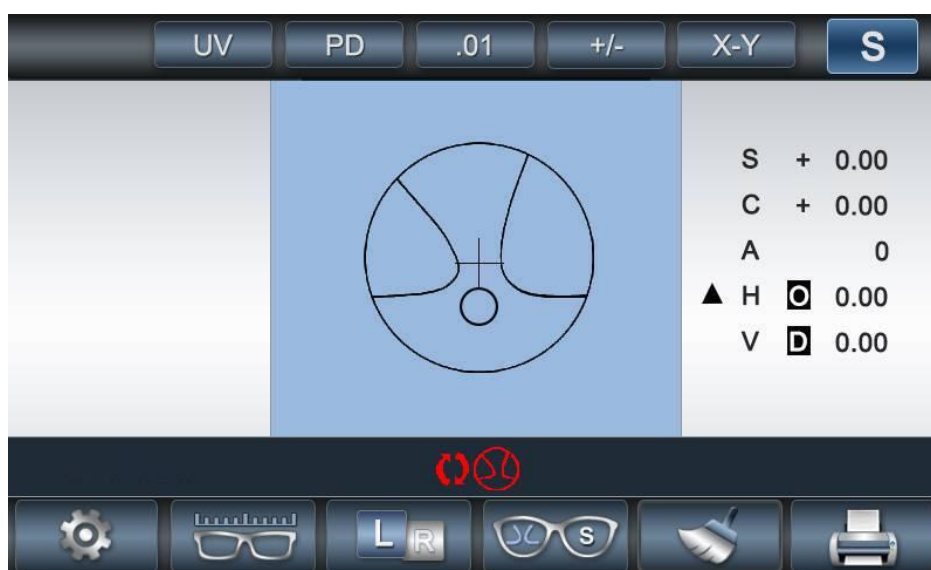
7.4.2 Mounted progressive lens measurement

- 1) Select progressive lens measurement or automatic identification interface

In automatic identification mode, the system will automatically determine the lens type

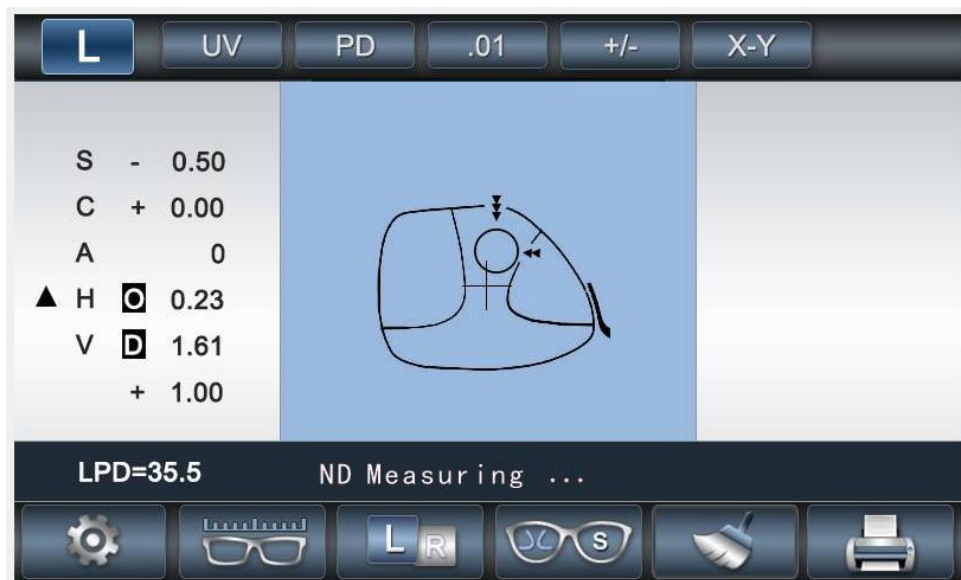
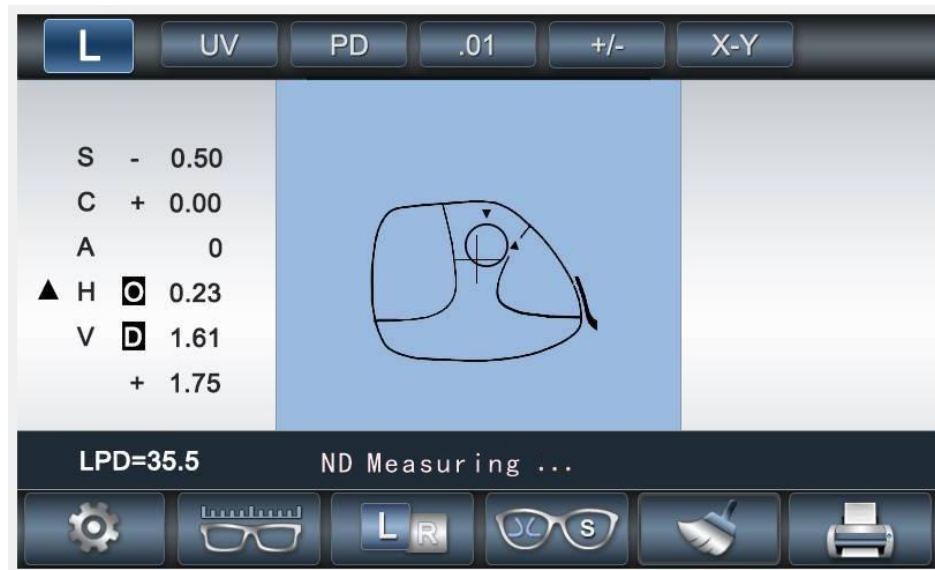
Operating:

- a. Put the lens center area on the nosepiece
- b. When the data displayed on screen is stable, slightly move the lens.
- c. Keep the lens at auto identification area, the screen will automatically enter the progressive lens measurement interface (if dust on the measured lens or the optical lens of the instrument, it can't automatically enter the progressive lens measurement interface.
- d. If the LD area and ND area are put in wrong position, the machine will prompt you to rotate the lens.



- 2.) Mounted progressive lens measurement

- switch to progressive lens measurement interface
- place the part where is slightly lower than the lens center and fix it on the nosepiece
- measure the LD area(the center of the LD area is in the scope which close to the frame center)
- measure the ND area: slightly move the lens horizontally and vertically according to the arrows guide until the arrows disappear and the power is stable
- the next mounted lens measurement same as the above steps



CAUTION:

- the arrows guide means the lens movement direction
- more the arrows mean area center to be measured is a little further
- only one arrow left, it means very close to the area center to be measured

7.5 Contact Lens Measurement

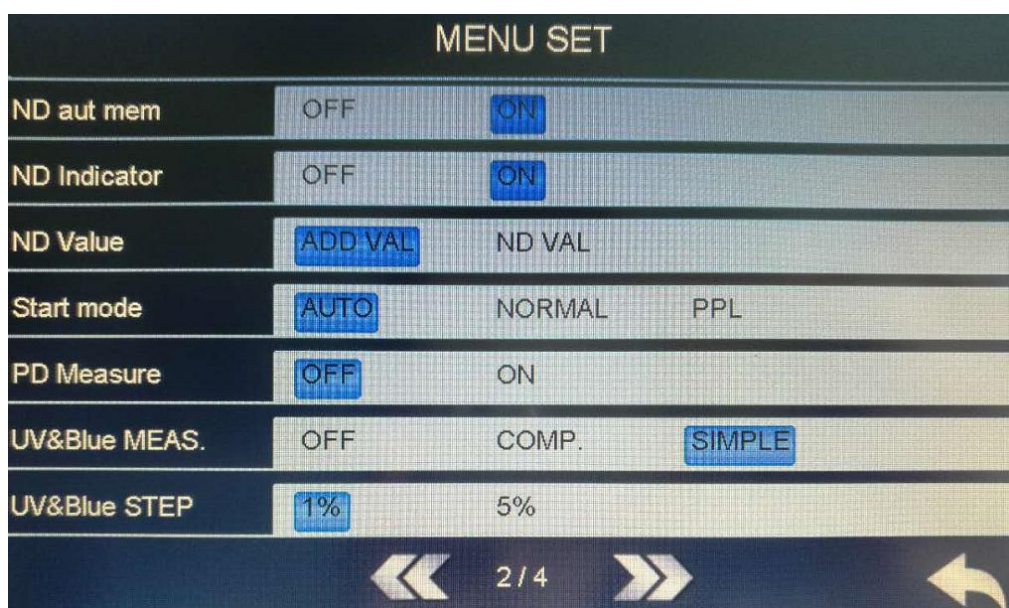
- 1.) Replace the nosepiece for the special one used professionally for contact lens measurement(smaller upper mouth)

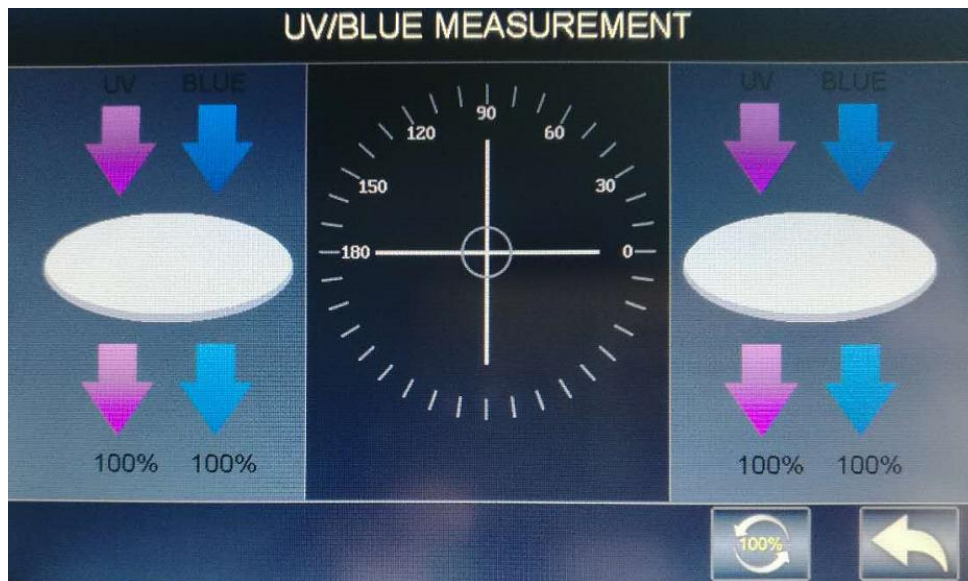


- 2.) Put the contact lens in the water (the hard contact lens no need water)
- 3.) Use tweezers to lightly take out the contact lens, place it on the soft paper or clean cloth till the water is dry
- 4.) Lightly place the dry contact lens on the nosepiece
- 5.) Use tweezers to lightly move the contact lens for measurement

7.6 UV/BLUE Transmittance Measurement

- 1.) **Contrast** measurement: measure and contrast the UV transmittance of various lenses
 - a. select UV/BLUE MEASURE and COMP. in menu.





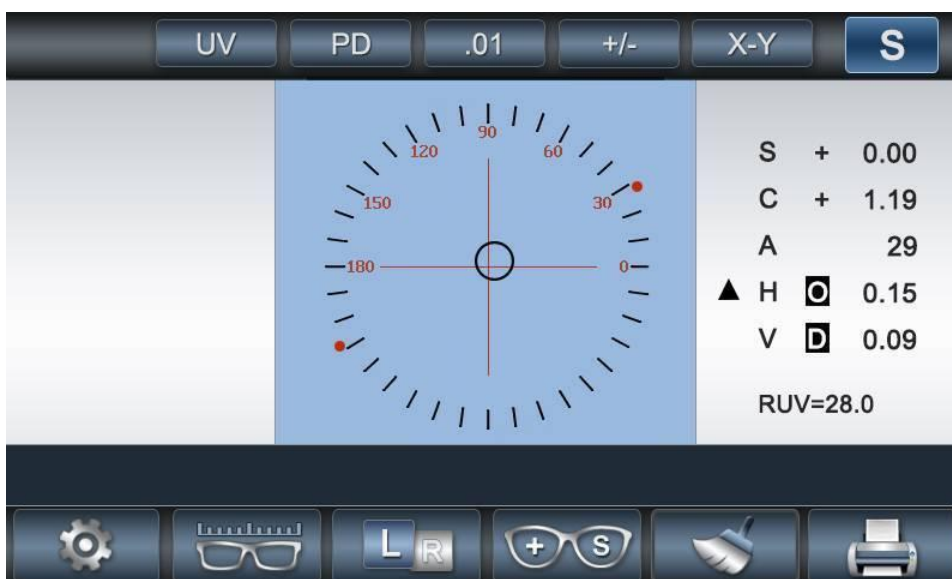
b. back to main interface, touch UV/BLUE key to enter the UV/BLUE transmittance measurement interface.

c. put on lens, and move to the lens center, touch  icon on screen, the instrument will automatically measure and get the lens UV transmittance.

d. replace lens, touch  icon on screen, the instrument will automatically measure and get the second lens UV transmittance. The interface will appear two lens UV transmittance values contrast.

2.) **Simple** measurement: the UV/BLUE transmittance value is displayed together with other data in the same interface

Select UV/BLUE MEASURE and SIMPLE in menu. Press the READ button for 3s or 4s, then loose hand, the measured UV/BLUE transmittance value will be displayed at the down right corner.

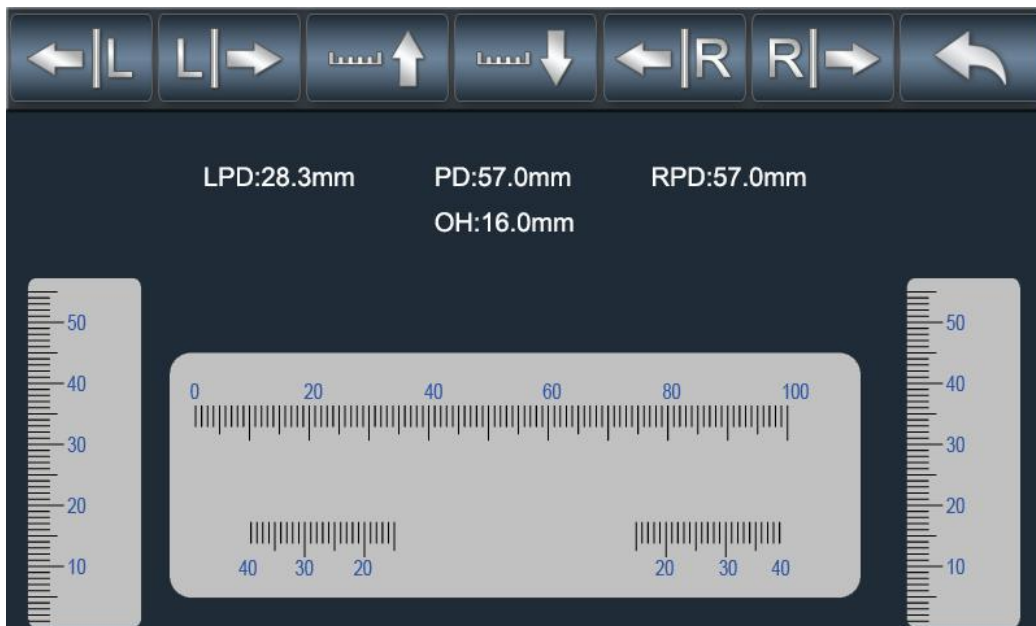


Replace for left lens, press the READ button for 3s or 4s, then loose hand, the UV/BUE transmittance value will be displayed at the down left corner.

CAUTION : The light intensity greatly affects the accuracy of the UV/BUE transmittance measurement. So during testing, should draw the curtains or use cloth/paper to block the light.

7.7 Frame PD and PH Measurement

Touch  key to enter frame PD and PH measurement interface



Holding the frame temples, horizontally place the frame with the optical centers marked on the screen bottom platform, keep the frame bridge center part aligned with the center guide line of the digital PD ruler (don't heavily press the touch screen), separately move the LPD and RPD buttons till the left and right blue vertical lines coincide with the lens centers, the PD and LPD and RPD values will be displayed on screen. Press the PH buttons to move the horizontal red lines up and down till coincide with the lens optical centers, the number which the left and right red lines point to on the rulers is the PH value, it will be displayed on screen.

8.Spare Parts Replacement & Maintenance

This instrument can only be used with the accessories provided by the original manufacturer. If the customer uses other accessories as replacement, the availability in technical security must be confirmed by the original manufacturer.

8.1 Printer paper replacement

When the red line appears, replace the printer paper immediately.

- 1.) Pull outwards the printer cover, open the cover
- 2.) Place the new printer paper in the box, keep the paper head upwards
- 3.) Draw the paper outwards and directly ride on the printer wheel
- 4.) Push the cover back and close the cover

8.2 Fuse replacement

- Before replacing the fuse, the power plug must be removed to make sure the power is disconnected in case the electric shock occurs.
- The replacement fuse must be replaced with the same type and fuse rating, otherwise it will cause a fire.
- In case of instrument failure, need to be disassembled for maintenance, must have the professional and technical engineer to complete, or contact your local dealer or manufacturer to complete the repair. The manufacturer is not responsible for the consequences of the self repair.



Warning: Risk of fire
Replace fuse as marked

100-120V~	T-2A 250V
200-240V~	T-1A 250V

8.3 Cleaning equipment

8.3.1 Before cleaning, turn off the power switch and unplug the power cord.

8.3.2 Be careful not to scratch the optical lens under the lens support. The scratches on the lens will significantly reduce the accuracy and reliability of the measurement.

8.3.3 Don't use strong volatile substances, thinners, benzene and other solvents to clean the outer body of the instrument, so as not to damage the appearance of the instrument.

8.3.4 When cleaning lenses, please use the hair dryer to remove dust, stubborn stains should be rubbed with a soft cloth soaked with soapy water and then clean with dry cloth.

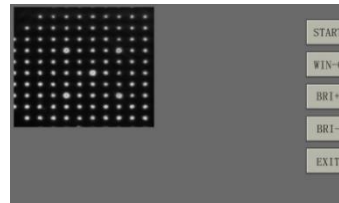
9. Common Trouble Shooting

9.1 When the device runs out of order, please follow the table below:

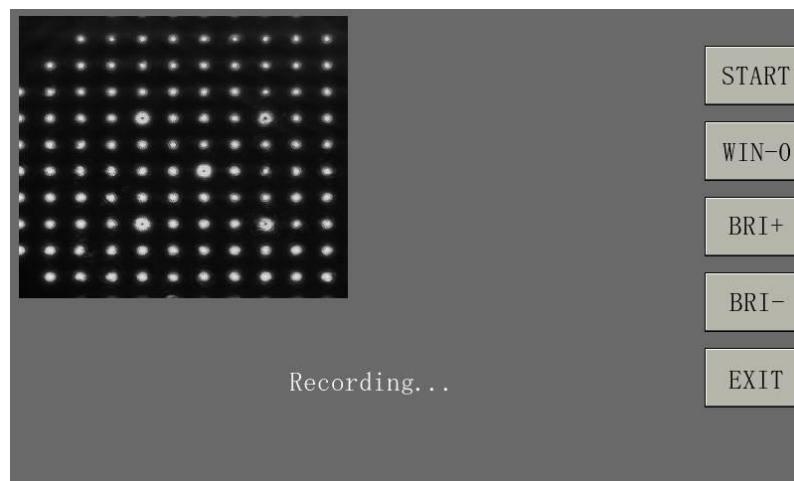
	PROBLEMS	CAUSE and REMEDY
1	Indicator light doesn't work	a. fuse broken b. no power aa. replace fuse bb. connect the power
2	Don't enter the interface when turn on the machine	a. there's lens on the nosepiece, "please take away glass" will be displayed on screen b. dust on the optical lens, "initialize error" displayed on screen aa. remove the lens on the nosepiece, touch  button to re-enter the work interface bb. clear the dust on the optical lens, press  button to re-enter the work interface
3	Printer doesn't work	a. no printing paper b. printing function is closed in menu c. no memorized data aa. install the printing paper bb. set printing on in menu cc. measure lens and memory the data
4	Don't display time when turn on the machine	a. nose holder(PD slider) not in the zero position c. set DATE DISP off in menu aa. move the nose holder to the far left bb. set DATE DISP on in menu
5	No marking points on lens or unclear	a. no ink aa. add ink or replace the marking pen

9.2 Zero Position Calibration:

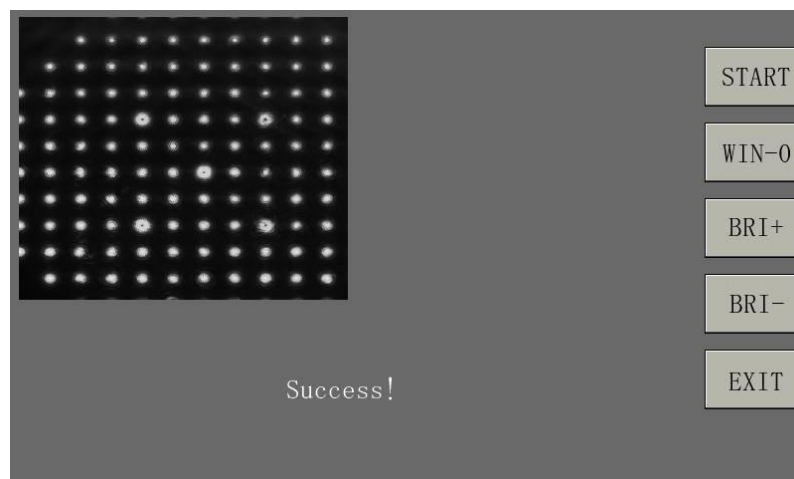
The power switch is in a closed state, press and hold the memory button for 3~4 seconds and turn on the machine to enter Zero Position Calibration interface, then release the memory key.



Press the right “START” key to perform zero position calibration.



When “Success” appears on screen, the zero position calibration is completed.



Press “EXIT” key to return to the working interface.

If the device has not returned to the normal working condition, please turn off the machine and contact the local representative or manufacturer.

CAUTION:

- The packing materials, accessories and components of this instrument shall be handled or recycled in accordance with the local regulations or control regulations.
- Do not throw away the lithium battery inside the instrument at will to avoid environmental pollution, please contact the professional waste-disposal company to dispose.

10. Service after Sales

The manufacturer is responsible for the safety and reliability of the instrument only in the following circumstances, that is:

- 1) The related electrical equipment is in compliance with the relevant laws and standards at home and abroad.
- 2) The installation, maintenance, etc. are made by the person who has been trained or authorized by the original manufacturer.
- 3) Use and maintain the instrument according to this manual and service manual.

The manufacturer does not undertake the responsibility for the warranty under the following items:

- 1) Improper use
- 2) The device has been damaged or not been maintained
- 3) The manufacturer's original series number label or production mark has been replaced or torn off.
- 4) Other manufacturers' products.

10.1 Service information

In order to provide you with convenient and fast after-sales service, please provide the following information accurately:

- 1) Product name, model number, serial number, date of purchase, dealer's name, problem descriptions, required parts and components, etc.

10.2 Accessories list

No,	Name	Specification	Qty.	remark
1	Auto Lensmeter		1pc	
2	Power cord	10A/250V	1pc	
3	Manual		1pc	
4	Nosepiece for contact lens measurement		1pc	
5	Fuse	1A/250A	2pcs	
6	Thermal printing paper		1pc	optional
7	Lens cleaning cloth		1pc	
8	Dust cover	transparent material	1pc	
9	Nosepiece dustcover	black rubber	1pc	
10	Desiccant		1bag	

