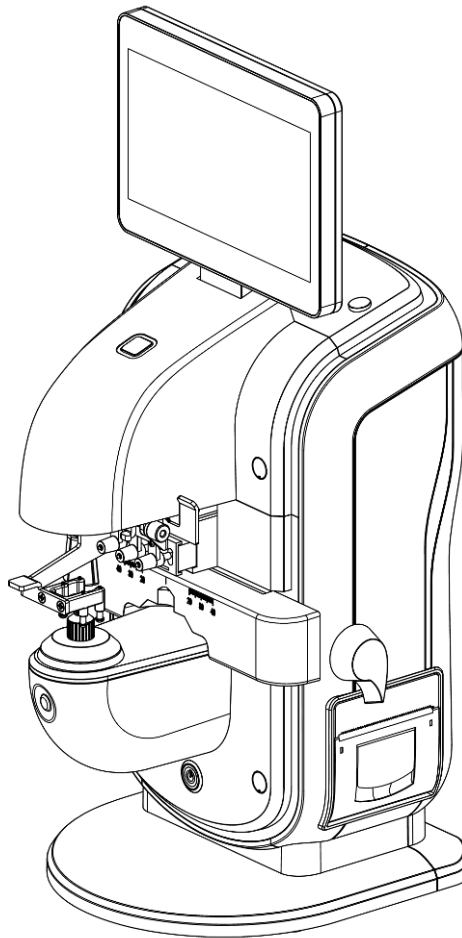


CONFIDENTIAL

# *Digital Lensmeter*

*DLR-700*

*Operation Manual*



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## 1 Product introduction

DLR-700 can measure the degree of single vision lens, double vision lens, three visions lens and progressive lens (PPL) quickly and precisely.

This machine has LCD touch screen, on which can show the measured data and PD of left and right eyes. And it also can show the centering by diagram marks on the screen and it can help to adjust the optical center of lens quickly. The 7-inch high-resolution TFT touch screen can show everything smooth and fine.

There is brief menu. Just pressing the keys on the screen, the graphs will show their functions accurately.

The max degree of this machine:  $\pm 25.00D$ .

The function direction of DLR-700

Model	DLR-700
Sphere	✓
Cylinder	✓
Prism	✓
Progressive	✓
Color lens	✓
PD, PH	✓
Print	✓
Remarks	With PD, PH and Print

## 2 Safe Notice

In this manual, the following marks mean the safe notice, please refer to the follow:



Notice: there will be dangerous. If not avoid, it can cause damage.



Notice: there will be dangerous, if not avoid, it can cause damage to the function of machine.

### 2.1 Notice in operation



Notice:

- Don't open or touch the inner part of machine if not necessary, or it may cause electric shock or make problem to machine.
- To use the stipulated voltage, if too high or too low, it will influence the operation or even cause damage to machine or result in electric shock.
- Don't put the wires under machine, or it will break the wires and cause cutting-out, fire disaster or electric shock.
- If the metal core of wires is exposed, it should be exchanged right away, otherwise, it will cause fire disaster or electric shock.

## 2.2 Notice in storage

Notice:

- Don't put the machine at some place humid or poisonous or with corrosive liquid or air.
- Don't put machine under the sunshine. To keep the suitable temperature and humidness.
- Notice: if the change of the outside temperature is too big, it will influence the operation of machine. Then it just need to put machine under the stable temperature for 3-10 hours, then it can be operated normally.

## 2.3 Notice in moving

- Don't pull the wires or cable, which will damage the machine or hurt people.
- Don't take machine by seizing the LCD screen when moving machine. You should hold the base by hands. Or it will hurt people or damage machine.

## 2.4 Notice in assembling



Notice:

- Don't put machine in humid place. Any water into machine will cause electric shock or other machine problem.
- To put machine at smooth place. Any shake during operation will make machine fall down and may hurt people or damage machine.

Notice:

- Don't operate machine under sunshine or near filament lamp. Don't install machine on the place that the surface with strong light reflect, like glass show box, mirror or polishing desk. Otherwise, these situation will influence the operation or make error.
- Don't operate machine at the place against electric fans or air conditioner, otherwise the dust will be flowed into machine which will influence the preciseness of measured data.
- Don't operate the machine at the place with dust or humid and hot, which will influence operation.

## 2.5 Notice in wires connection



Notice:

- Don't put too many plugs on one power socket, which will make it too hot and cause fire disaster.
- There must be ground connection to the power supply to protect the security of people and machine.

## 2.6 Notice after operation



Notice:

- To cut off power supply when not run the machine, and put on the dust cover. Long time connection to power supply will short the usage life of machine. And without dust for long time, the falling dust will influence the preciseness of machine.
- Not operate machine for long time, please pull the plug out from power socket, in case to prevent from fire disaster.

## 2.7 Notice in maintenance



Notice:

- If there is any problem with machine and need to take down the machine for check, please contact with our agent or our branch office. You need to take all the responsible to any damage to machine from your personal action to it.
- Don't scrape the protecting lens which under the lens base, otherwise it will very influence the preciseness of measured data.

## 2.8 Notice in accident



Notice:

- If the LCD screen broken, to knock it into pieces and wash and sweep them away by alcohol, then to burn them down. If hands touch the liquid crystal, then to wash hands with water right away. 5

## 2.9 Marks on machine

Please read the manual carefully.

- It means that the power supply be off.
- | It means that the power supply be on





### 3 Introduction to machine

#### 3.1 Main body

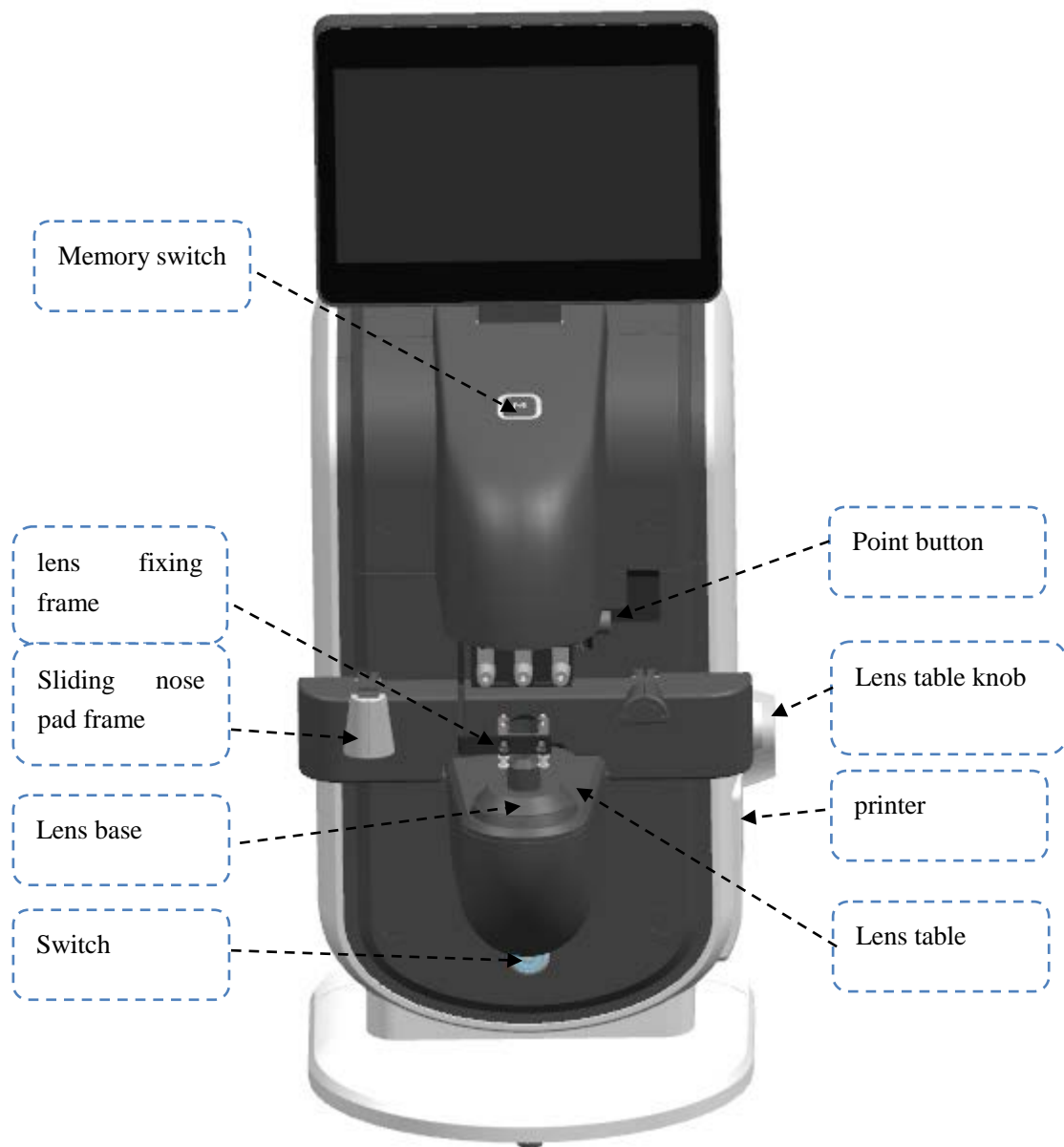


Figure 3.1 Outlooking of main body

- lens fixing frame: when fixing the lens, to up the frame and down it with gentle. When take down lens, to up the frame till there is a sound like “ka”, then the frame will be locked.
- Sliding nose frame: which used for measuring PD. To put the nose pad

on the frame and move the frame, the PD will be measured out automatically.

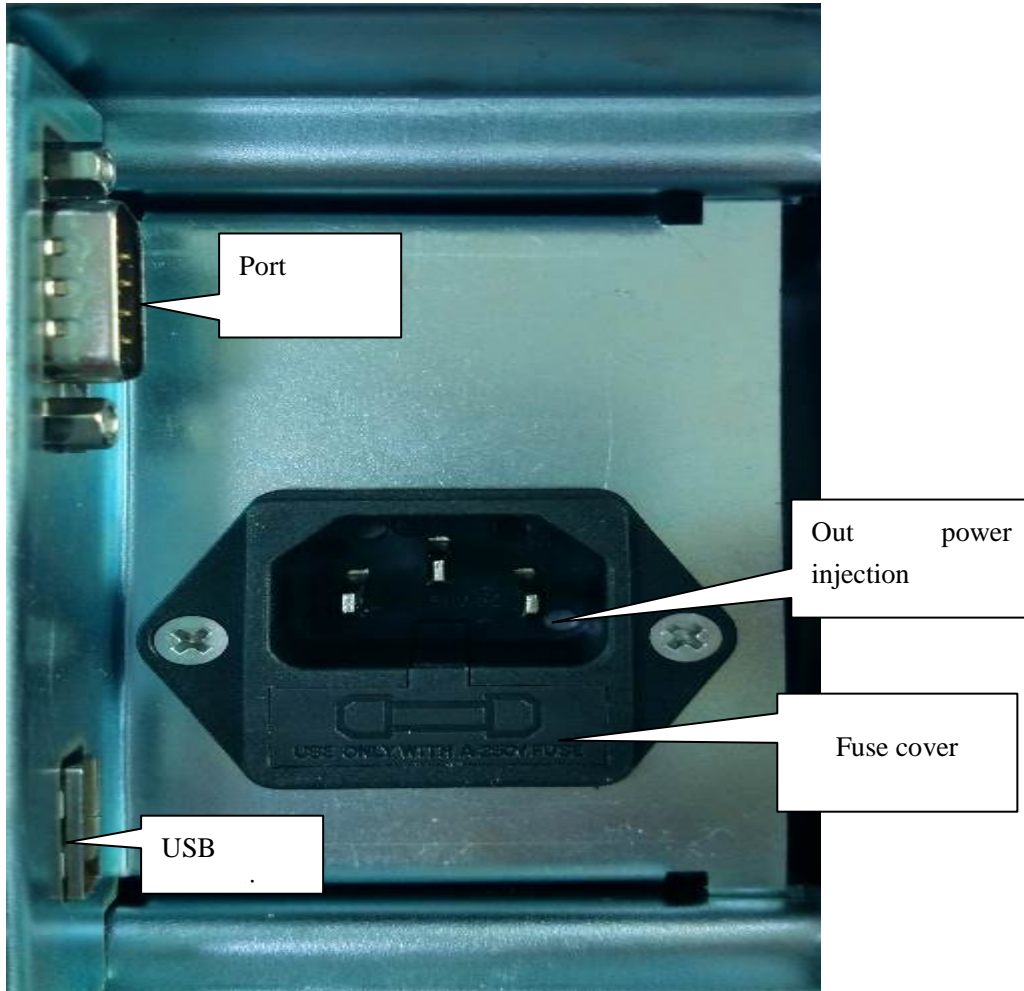


Figure 3.2 injections on the back of machine

- Lens base: which used for putting lens and as the basic point of measurement. Dust cover: which used for protecting machine from dust. Before operating machine, please take down the dust cover.
- Switch : short-time press to turn on machine, and longer press to turn off machine.

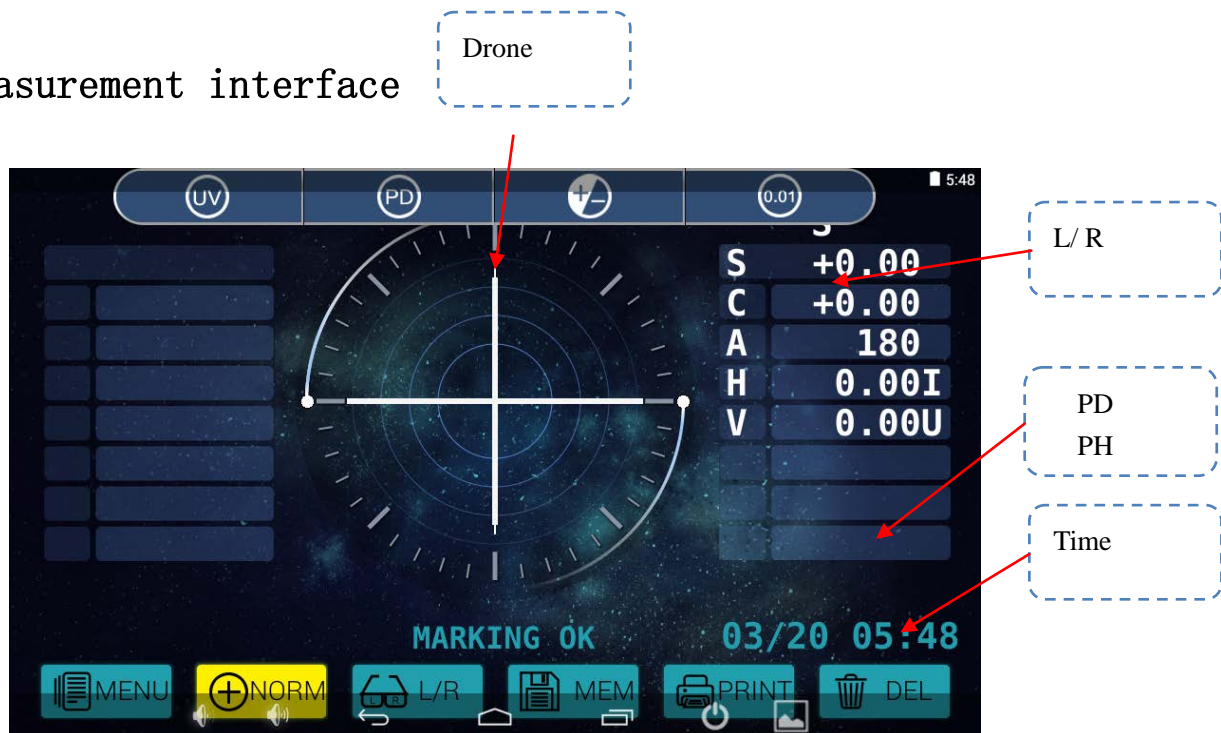
- Point button: to mark the center of lens and the optical axis of astigmatism glasses.
- Lens table button: to dolly moves lens and measure the diameter of lens (the diameter can be read out by the degree scale under the button.)
- lens table: to fix the direction of lens frame. To put the bottom of lens frame on the lens table when make the measurement. Don't move the lens table directly, but just moving it by lens table knob.
- Printer: to print the measured data.

Note: no operation for some time, machine will turn to screen saver mode.

The time of this mode can be set in Menu. Back to measure mode, just gentle touching on the screen.

### 3.2 Operation panel

- Measurement interface



**Figure 3.3 measurement interface**

Showed degree: 0.01、0.12、0.25D

Astigmatism mode: +、+ / —、—

- Drone

To show the measured point when measure lens.

The shape of drone will change as follow when focusing:

⊕: Off center

⊕: close to center( within  $0.5\Delta$ ) and it will be showed in screen.

⊕: focused on center (mark point) and it will be showed on screen.

- L/ R

When the left side or right side (L/ R) has been set and the mark showed up, the degree of the side will be showed under the mark.

S means to measure one side lens.

- PD

To show PD(LPD: left PD; RPD: right PD) and the PD of glasses.

**Marks: functions are showed as marks**



Menu: to enter into and modify the system parameter.



Memory: to save the measured data



Mode: to change the measurement mode( single or progressive measurement mode)



Print: to print out the data



Figure 3.4 function of marks on measurement interface

#### UV measurement interface

Sliding the screen, when without glasses, the screen will appear like following

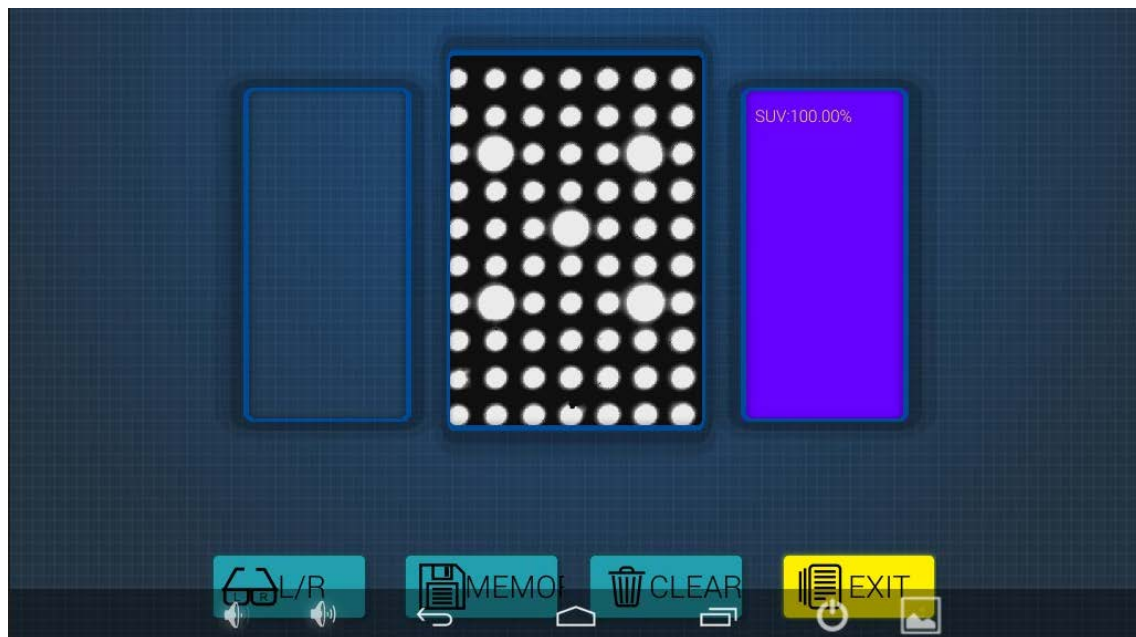
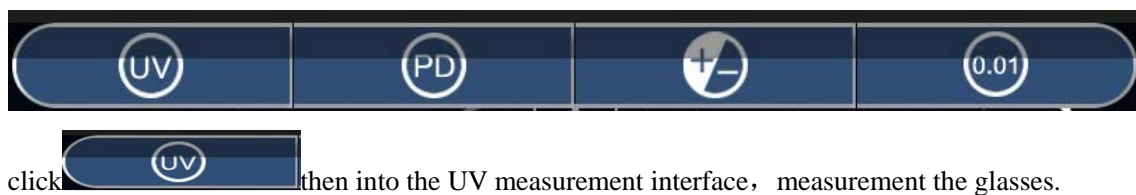


Figure 3.5 UV measurement interface

#### Menu shows:

After entering into Menu, to press the corresponding button to change the menu options, then back by pressing “exist” .



Figure 3.6 setting interface

Sheet 3.1 parameter options

Step	0.01D, 0.12D, 0.25D
Cylinder	Mix, +, -
Lens	Normal lens, hard lens
Prism	No display, X-Y, P-B
Screen saver	Closed, 3minutes, 5minutes , 10minutes
Auto memory	Closed, near to center, focus on center
language	ENGLISH
Switch of PD	On, off
Backlight adjust	Light dark clock
Wallpaper	gridding, halo, starry sky
Time setting	Yes, no

Print and port setting	Yes, no
ID setting	Yes, no
Software type	Newest

## 4 Operation

### 4.1 Assembling

(1) to check the attached parts: after opening the package, to check all the attached parts (according to the attached list).

(2) to find a smooth place without direct sunshine and put down machine well.

(3) to connect with power supply: to plug the power output injection of adapter to the power injection at the back of machine.

(4) to put the grounding terminal well.

### 4.2 Test

(1) to turn on the power switch, just gentle touching on switch.

(2) the test data should be 0D without any lens. To turn on the power so check if everything is OK.

**Note:** if all the data showed on measurement menu are not 0, then it means that the protecting glass is dirty, which is in lens base. To blow off the dust by the balloon. If it is still dirty, then to wipe it with lens cloth.

It should be cleaned every short time. Be sure to move lens base up while

the protecting lens is in cleaning.

## 4.3 Operation

### 4.3.1 Lens settings

#### 1、to clarify the left side and right side of lens:

- No PD measurement, the sliding nose pad frame should be move to left side. L/ R keys will be workable.
- In PD measuring, the sliding nose pad frame will direct the left or right side and it will measure out the PD of left or right while the L/ R keys are not workable.
- If no need for choosing left or right side, there will be **S** showed on the right up corner of measurement interface.

#### 2、Lens settings

To put the lens on the lens base, and the convexity upward.

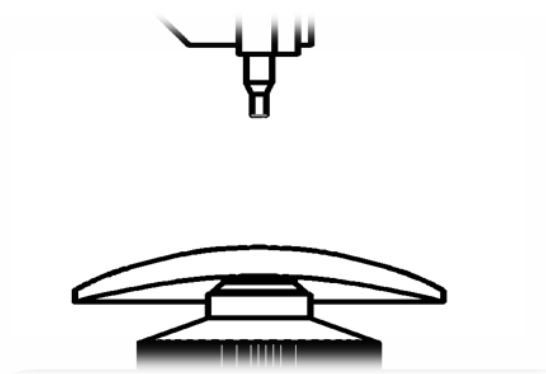


Figure 4.1 to put the measured lens



### 3、Lens fixing

To put the lens fixing frame on lens.

#### 4.3.2 Lens measurement

##### 1、Single vision lens measurement

(1) to focus the drone on the center

To move lens to make the drone(+) to the center. When the distance between the drone and center less than  $0.5\Delta$ , the shape of the drone will be as a cross (+); When the drone at the very place at center, the shape of the drone will be a thicker cross (⊕). There are two ways to confirm the measured data:

A: to press the memory key and the data will be saved. When data be saved, the direction type of astigmatism +/- can be changed. To press clear key, then it will restart the measurement.

B: automatical memory settings, the data will be saved automatically according to the settings, then there is no need to press memory key anymore, and the direction type of astigmatism +/- can be changed. To press clear key, then it will restart the measurement.



Figure 4.2 measurement of cursor move on lens



Figure 4.3 measurement of center focusing

## 2、measurement to lens with frame

### Normal measurement

(1) to press L/ R key to move the drone (+) to the center. When the distance between the two less than  $0.5\Delta$ , the shape of the drone will be as a cross(+); When the drone is just at the very point of center, the shape will be a thicker cross (+). To press memory key (or automatical

memory set before) , the measured data will be saved.

(2) to press L/ R key to measure the other lens, and repeat action(1).



Figure 4.4 measurement of finished lens and save the data of left side

PD measurement: (no such function in Model A) The change of left or right side should be done by the move of sliding nose pad frame.

(3) to rotate the lens table knob to move the lens table till touch the bottom of lens frame, and move sliding nose pad frame to the center of lens frame. To move the lens to make the drone(+) close to the center, when the distance between the two less than  $0.5\Delta$ , the shape of the drone will be as a cross(+); When the drone is just at the very point of center, the shape will be a thicker cross (+). To press memory key (or automatical memory set before) , the measured data will be saved.

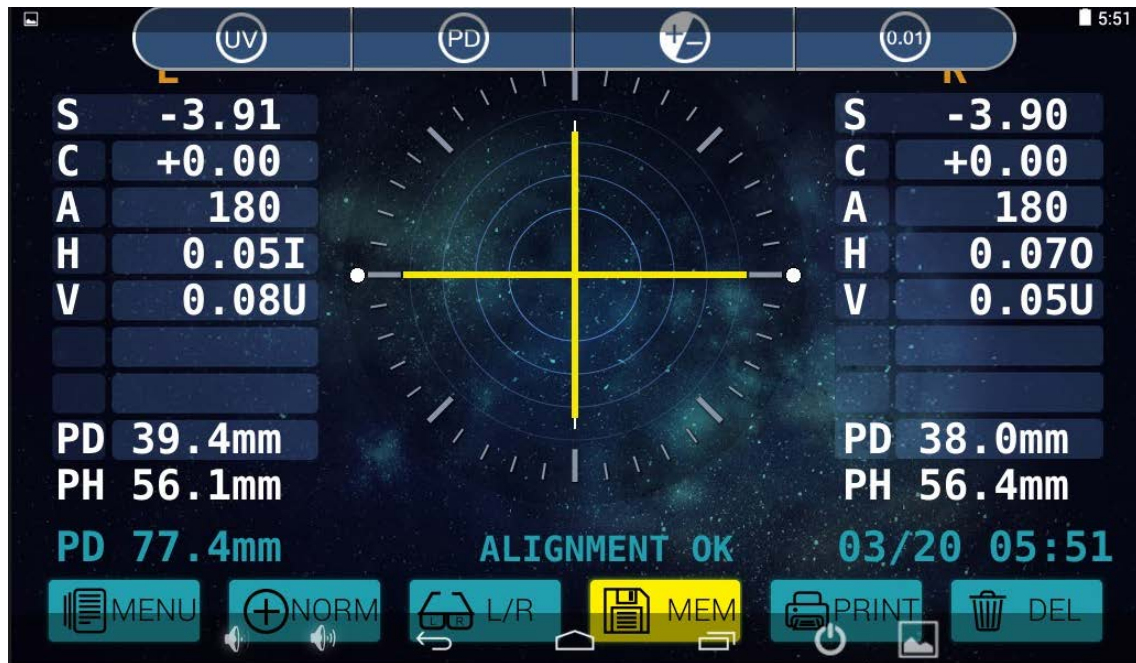


Figure 4.5 measurement of finished lens and save the data of left and right side

(4) to check the other lens, to move the sliding nose pad frame along with the lens frame. Action as (1).

### 3、measurement of high index lens:

This machine is manufactured with standard green light source. There is no need to set the Abbe number when measure the high index lens. The measured data showed on the screen will be the correct one.



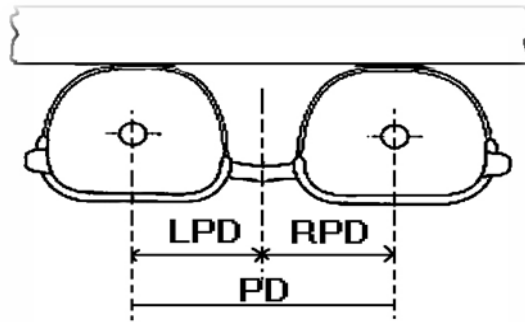


Figure 4.6 PD of lens with frame

4、 to press print, then the machine will print out the data.

One side

Two side

(L)		(R)
- 3.00D	SPH	- 2.99D
+ 0.00D	CYL	+ 0.00D
180°	AXS	180°
0.06Δ	PSM	0.05Δ
169°	Q	185°
51.6mm	P D	43.8mm
60.1mm	P H	60.4mm
2016-02-17_10:40:45		

figure4.7 print of measured data

## 5、 Measurement of double (triple) vision lens:

There are two keys used in this measurement, a. Memory; b. Mode

(1) To put the far vision part(far vision range) of lens on the lens base.

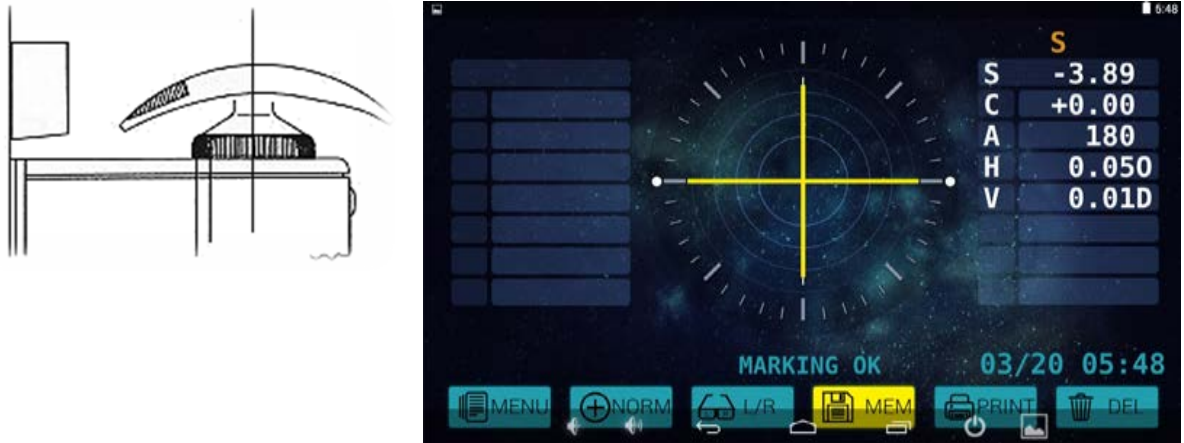


Figure 4.8 measurement of far vision range and measured data saving

## (2) Measurement of far vision degree

When the shape of the drone as (+) or (⊕), to press the Memory key, then the measured data of far vision degree will be confirmed.

## (3) ADD of double vision lens

To move the lens toward yourself till the near vision part (near vision range) of the lens on the lens base. To press Mode, there will be AD1 on the screen. When the notice showed under the drone as “close to the center” (there is no need to focus the center perfectly), to press the Memory, then the measured data of near vision part will be confirmed. And the measurement finished.

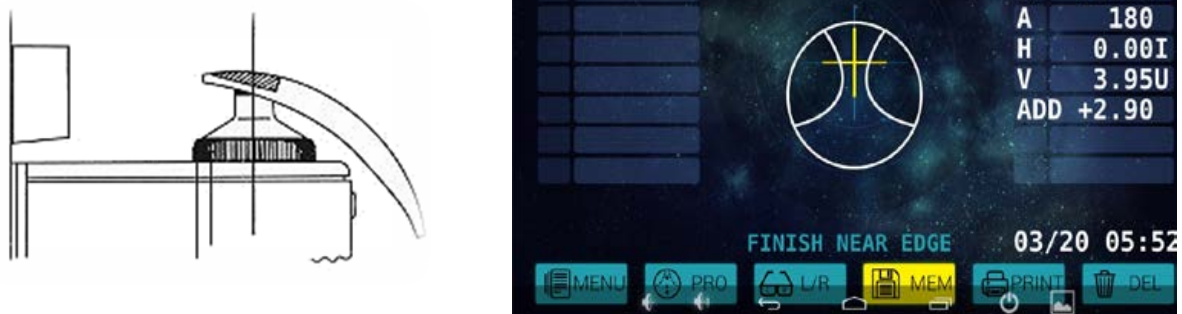


Figure 4.9 to save the measured data of near vision range

#### (4) ADD of three visions lens

The way to measure far vision part of three vision lens and double vision lens are the same. ADD should be measured twice.

a. To move the lens toward yourself till the center of near vision part on the lens base. Then to press Mode, there will be AD1 showed on the screen.

When the notice showed under the drone as “close to the center” (there is no need to focus the center perfectly), to press the Memory , then the measured data of the center of near vision part will be confirmed. Then continue the measurement.

b. To move the near vision part to the lens base, then press Mode, there will be AD2 showed on the screen. When the notice showed under the drone as “close to the center” (there is no need to focus the center perfectly), to press the Memory , then the measured data of near vision part will be confirmed.

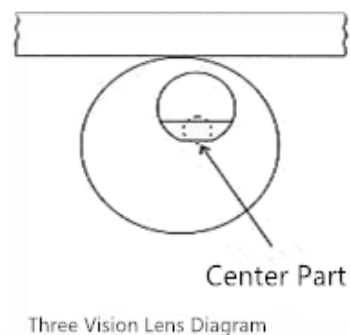


Figure 4.10 measured data of three vision lens

## 6、measurement of progressive lens (PPL)

To press the lens mode exchange key to enter into the PPL measuring mode. During this measurement, the Memory key should be used. There are two PPL measurement: non-edgered lens and lens with frame.

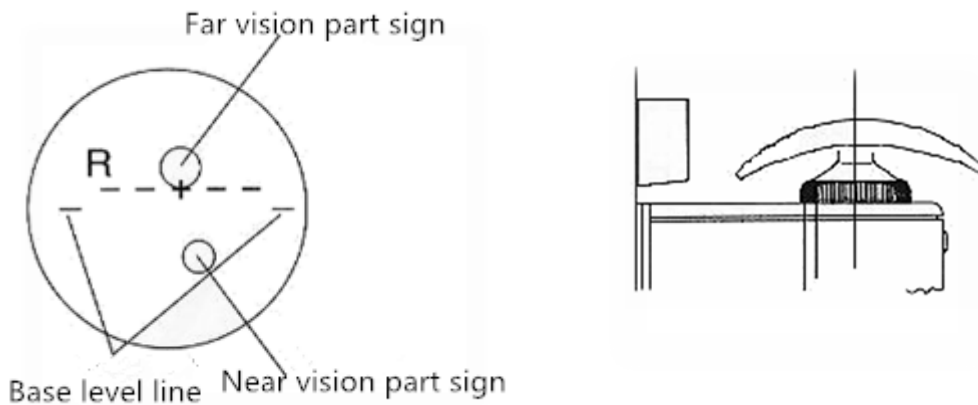


Figure 4.11 diagram of progressive lens

### ● Measurement of non-edgered lens

To mark the lens with the special eyes ports supplied by manufacturer and make the lens convexity upward. In the near vision range, to keep the horizontal reference line in horizontal and lock the lens. To measure the far vision range first, and to move the lens up and down and from left to right to make the drone just on the center of the cross line. When the drone as the thicker cross (+), and to press the Memory key, the data of far vision range be confirmed. Then to move lens till the near eyes ports on the lens base, there will be ADD and measured data showed on screen, just to press Memory to save it.





Figure 4.12 center focusing of far vision range



Figure 4.13 the biggest data, ADD of near vision range

● measurement of lens with frame

There is no marks for range on lens when measure with the progressive screen. So be careful during the operation.

(1) to put the lens with frame well

(2) to measure the parameter of the far vision range. The center of far vision range is close to the center of the frame. The measuring way is same as that of item 6 above.

(3) then to measure the parameter in near vision range.

To move the lens with frame by moving the knob and dam-board outward. The optical center of near vision range is close to the center of frame, to find the optical center of near vision range by moving it from left to right. Watching the ADD on the screen, to press the Memory key when it shows the maximum.

## 7、Measurement of prism lens

To measure the prism lens on glasses.

(1) to point out the pupil center: to let customer to wear glasses and look into the distance, and point out the pupil center on every lens.

Note: the diameter of the point should be smaller than 1mm. If too bigger, it will influence the measurement.

(2) to choose the left or right wide of lens: to press L/ R key  
to choose the left right lens or right side lens.

(3) to choose the show way of prism

Rectangular coordinate system(X-Y)  $\Delta$ : I 5.00cm/m

Polar coordinate system(P-B)  $\Delta$  : 1.00cm/m

D 0.03cm/m 0°

(4) Lens settings

To put the lens on the lens base and convexity upward.

(5) to fix lens by lens fixing frame

(6) to put one eyes ports on the center of lens base(no need for center focusing).

(7) to press the Memory key (Note: if data with error, it means that the eyes ports is just on the measuring optical. It just needs to move the lens a little, then it can measure the data. )

## 8、The optical center marks of lens

Be used to determine the optical center and horizontal direction of lens so that it can be settled in the frame.

(1) to move the drone(+) to the center cross line, the shape of drone will be turned to the thicker one(⦶). If it is the lens with frame, then to move the lens table close to the bottom of frame.

(2)to make the astigmatism axis to show the data: to rotate the lens till there shows the data, which will be showed through axis. If the thicker (⦶) turns to be (⦶), then, it should be center focusing again.

(3)to make the data of prism lens: to make the data of prism same as that of the matchable lens. When choose the rectangular coordinates, the “I” on screen mean inward, “O” means outward, “D” means downward, “U” means upward. To put the measured lens on the lens base, with gentle rotation to make the basic prism data same as the data if the matchable lens.

(4)to mark on lens: to rotate the point button, and to mark out the three points on lens which in the same horizontal line of lens table. When

take the lens down, to up the lens fixing frame till there is a “KA” sound, then to take the lens. (Don’ t touch the marks, otherwise they will be not clear.)

## **5 Maintenance**

### **5.1 daily care**

- (1) Don’ t put machine under sunshine;
- (2) Don’ t put heavy part on machine, which will damage to machine;
- (3) To keep clean both machine and air around;
- (4) To keep machine clean. Don’ t use the organic solution like volatile liquid, diluent or benzol to machine;
- (5) No operation for long time, to cut off power supply and pull out the plug;
- (6) To put on the dust cover when not use the machine.

## **5.2 replacement of materials**

### **5.2.1 replacement of print paper**

(1) open the printer cover plate, place printing paper and then cover the printer

## **5.3 machine clean**

(1) when machine is dirty, please wipe machine with soft dry cloth. If there is any dirty spot, to wipe by cloth with neutral detergent then clean with soft dry cloth.

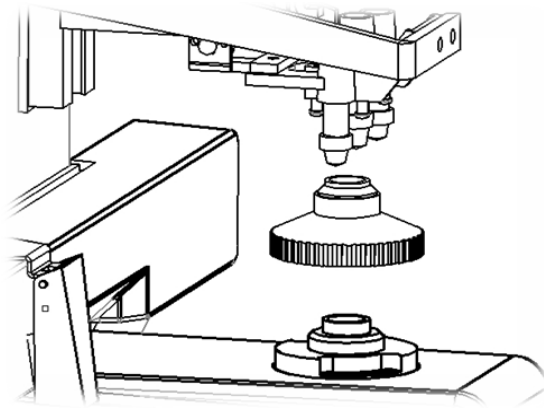
(2) to clean the protecting glass by balloon to blow away the dust. If it is still dirty, to wipe it with clean dry cloth. To clean the protecting glass regularly and move up the lens base when clean it.

Note: don't scratch the glass, it will influence the preciseness.

(3) Don't use alcohol, gas, ether or acetone to wipe machine.

(4) to clean the light transfer glass regularly.

The lens base should be taken down while turning off machine and clean the light transfer glass, then to put on the lens base and turn on machine to calibrate again (Below is the clean to the light transfer glass after taking down the lens base.)



**Figure 5.2** the protecting glass

## **5.4 notice in moving**

- (1) to cut off power switch;
- (2) to pull out the plug;
- (3) to hold machine by hands from the base of machine and move machine;
- (4) handle with care, and to put on a smooth table.

## **5.5 service information**

### **(1)maintenance**

Anything problem with machine can not be settle according to the manual,  
please contact with the after sales services office

Please offer us with following information about machine:

**Machine :** DLR-700

**Serials number :** the number on the sticker

**Problem :** please try to be detailed (picture and video are the  
better choice )

((2) the range of maintenance:

We will offer maintenance to machine for the whole usage life to maintain the function.

(3) About the useless machine

- Don' t throw it everywhere, the machine and the parts with pollution;
- Before your action with the useless machine, please contact with the professional waste disposal company or the agent.

## 6 Simple fault phenomenon and solution

### 6.1 solution to general problem

**Figure 6.1 General problem solution**

No.	fault	problem	Solution
1	No reaction from screen when turn on machine	There power wires are not connected well, or turn off machine not correctly	To check the wires if in good condition, and cut off the power then turn on it after a while.
2	The screen doesn' t show anything suddenly.	The screen protection has been set.	To touch screen and enter into Menu to set a reasonable time for screen protection.

# Auto lens meter operation manual

3	There data is not 0 when there is no lens.	The light is too strong or the protecting glass is dirty	To avoid the strong light or clean the glass
4	Not reaction when press the print	No measured data saved.	The data should be saved then can be printed.
5	The marks on lens not clear	There is problem with the pen.	To change the pen
6	Measured data preciseless	Need to calibrate the data again	Enter into the interface for calibration



## 7 Performance parameter

**Figure 7.1 performance parameter**

<b>The range of measurement</b>	
Sphere	$0\text{m}^{-1}\text{to}\pm 25\text{m}^{-1}$
Cylinder	$0\text{m}^{-1}\text{to}\pm 10.00\text{m}^{-1}$
Astigmatism	$0^{\circ}$ to $180^{\circ}$
ADD	$0\text{m}^{-1}$ to $\pm 10.00\text{m}^{-1}$
Prism basal Angle measurement range	$0^{\circ}$ to $360^{\circ}$
Prism	Horizontal 10cm/m, Vertical 15cm/m
<b>The accuracy of measurement</b>	
Dioptric	$(0.01/0.12/0.25)\text{ m}^{-1}$
Prism	$(0.01/0.12/0.25)\text{ cm/m}$
<b>Mode of measurement</b>	
Cylinder	+, ±, -
Prism	X-Y, P-B
Speed of measurement	0.2 second
Diameter of measurable lens	18 to 110mm
<b>Other parameters</b>	
Display	1024*600 TFT and touch screen
Printer	Thermal printer
Size	203 (W) x 240 (L) x 480 (H) mm

Weight	About 5.1kg
Power supply	AC 220V 50Hz
Power	25VA

## 8 Attached list (packing parts)

- |                            |         |
|----------------------------|---------|
| (1) main body              | 1 unit  |
| (2) Print paper            | 1 roll  |
| (3) Dust cover             | 1 piece |
| (4) Power wires            | 1 piece |
| (5) Inkpad oil             | 1 box   |
| (6) Operation manual       | 1 piece |
| (7) Certificate of quality | 1 piece |
| (8) Maintenance card       | 1 piece |

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