AUTO LENSMETER

TL-6500B

USER MANUAL

CE

Please read this manual before use.

The device complies with IEC60601 and UL Standard，in order use this device properly and safely, please read the user manual carefully and thoroughly understood all the operating procedures before using the device. At the mean time, keep this manual handy for verification.

This manual is meanwhile as a training reference manual, If addition copy needed or have questions about this device, please contact us or your authorized distributors.

Information contained in the user manual has been confirmed when publish. Product specifications are subject to change without prior notice. The rights of change the product which contains in this manual is reserved by our company, and without prior notice. Sold products does not involve in this change.

1. Outline of the Device

The TL-6500 Auto lensmeter is designed to measure vertex powers and prismatic effects of spectacle and contact lenses, to orientate and mark uncut lenses, and to verify the correct mounting of lenses in spectacle frames.

The device could measures the optical performance of spectacle lenses such as single vision, bifocal, and progressive power lenses or contact lenses.

The TL-6500 is a digital display auto focus lensmeter, measurement power is 0.01D.

TL-6500 employs a full-graphic LCD display, displaying measured data of both the Right and Left sides lenses, showing the alignment condition with graphic targets, to makes alignment the optical center fast. The device with simply optional menu, with corresponding touching key on the LCD, to makes the operating convenient and efficient.

The device adopts tiltable LCD display, provide fine viewing angle when you standing or sitting.

The function and measurement accuracy of TL-6500 Auto lensmeter is far better than the manual lensmeters.

The device executes the Q/NEY 06—2004 TL—6500 enterprise standard, and complies with State standardGB17341-1998(optical and optical device) State standard.

2. Safety precautions

In this manual, using a signal word to designate the degree or level of safety alerting. The definition is as follows.

⚠CAUTION： indicates a potentially dangerous situation, if not avoided, may result in death or serious injury.

⚠ **NOTICE**：indicates a potentially dangerous situation, if not avoided, may result in minor or moderate injury or property damage.

2.1 During use

⚠ **NOTICE**：

- Never open the outer case and touch the internal of device, electric shock or device malfunction may result.
- Using the device with specified power voltage, if the voltage is too high or too low, the device may unable to work properly, and the device will damage.
- Do not place heavy objects(such as the device itself) on the power cord, the damaged power cord may cause short circuit, fire or electric shock
- Immediately replace the power cord with new one if the metal cord is exposed, to avoid fire or electric shock.

2.2 Storage

Prompt：

- Do not store the device in an area that is exposed to moist or water, or contains poisonous liquid or gas.
- Avoid storage the device in a place exposed to direct sunlight. Maintains the place with proper temperature and humidity.
- NOTICE: The internal optical components will may not work normally when the environment temperature is changing largely and quickly, place the device in normally environment temperature for 3-10 hours, it will works properly.

2.3 Moving

⚠ CAUTION：

- Never pull at the power cord, it will damage the device or injury other people.
- When movement the device, do not catch the LCD display to lift the device, we should hold the base of the device and moving it. Or else it may injury other people or damage the device.

2.4 Installation

⚠ CAUTION：

- Do not install the device in moist place. If the water gets into the device, it will cause electric shock or malfunction.
- Install the device on a horizontal and steady surface, if the device shake and drop by accident, it will injury people or damage the device.

Prompt：

- Do not install the device in a place exposed to direct sunlight or beside incandescent lamp, strong reflection surface such as mirror, glass display case or polishing desk top is not suitable to install the device, the device may work irregularly or issue error messages.
- Do not install the device where it is exposed to direct air-conditioning or fan flow, dust may gets into the lens holder and affect the measurement accuracy.

2.5 Connecting the power cord

⚠ CAUTION：

- Do not connect the electrical outlet with too many plugs, it will makes it overheating and cause fire.
- The electrical outlet must have a grounding terminal, to ensure the safety of people and device.

2.6 After use

⚠ CAUTION：

- While the device is not in use, turn it off and put on the dust cover. Long-term keep the device turning on will reduce the useful life, if not put on the dust cover for a long time, dust will affect the measurement accuracy.
- Disconnect the power cord from the wall outlet if the device will not be used for a long time,in case of fire.

2.7 Maintenance

⚠ CAUTION：

- When add mark ink, please pull-out the ink cartridge lightly and put it on the desktop firstly, avoid not to hurt your fingers.

Prompt：

- When the device malfunction happen, please contact with us or your authorized distributors for maintenance, do not maintenance the device by yourself, we are not responsible for any accident resulted from improper servicing.
- Please pay attention not to scratch the protective glass under the nosepiece, flaws on the glass substantially

lower the reliability of the measurement.

2.8 Accident

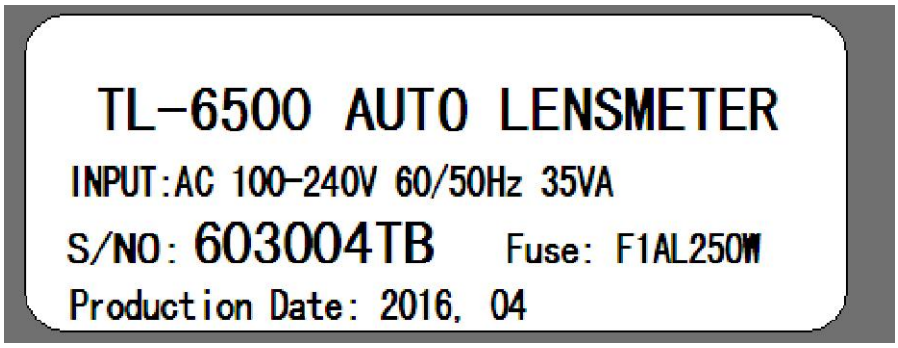
⚠ CAUTION：

- In case the LCD display break up,please break it into pieces and use **isopropyl alcoholto clean up the LCD, and then burn up it.**
- If you hand touch with the break LCD, please clean by water as soon as possible.

2.9 Label introduction.

Ensure use the device safety, there are two labels on the reverse side of device, please make sure use the power supply and replace the fuse as specified.

Power supply specification showing on the label as below figure.



Fuse specification showing on the label as below figure.

2.10 Label on the device

 Means reading the user manual carefully before use the device.

O Power switch on.

| Power switch off.

1. Main technical parameters

1.1 Sphere measurement range: -30.00DS ～ +30.00DS
Steps: 0.01DS/0.12DS/0.25DS

1.2 Cylinder measurement range: 0.00 ～ ±10.00DC
Measurement mode: Mix/ + / -
Steps: 0.01DC/0.12DC/0.25DC

1.3 Cylinder axis measurement range: 0°～ 180°
Steps: 1°

1.4 ADD measurement range: -10DS～＋10DS
Steps: 0.01DS/0.12DS/0.25DS

1.5 Prism measurement range: 0 ～ 20△
Measurement mode: X-Y rectangular coordinates
P-B polar coordinates
Steps: 0.01△/0.12△/0.25△

1.6 Measurable lens diameter: φ10mm ～φ90 mm

1.7 Measurable lens center thickness: <=20mm

1.8 PD measurement range: 42mm ～ 82mm
PH measurement range: 8mm ～ 45mm

1.9 Measurable frame leg length: 0 ～ 158mm

1.10 Observation measurement UV transmittance

1.11 Vertex power measure wave length, UV measure wave length: 525nm

1.12 Power supply: AC 100V-240V, 50Hz-60Hz

1.13 Rated power: 35VA

1.14 Dimension: 255mm(L)×224mm(W)×434mm(H)

1.15 Weight: 5Kg

1.16 Display: 800x480 TFT touch screen

1.17 Printer: 57mm Thermal printer
1.18 Interface: RS232

1.19 Working temperature, humidity, air pressure range:

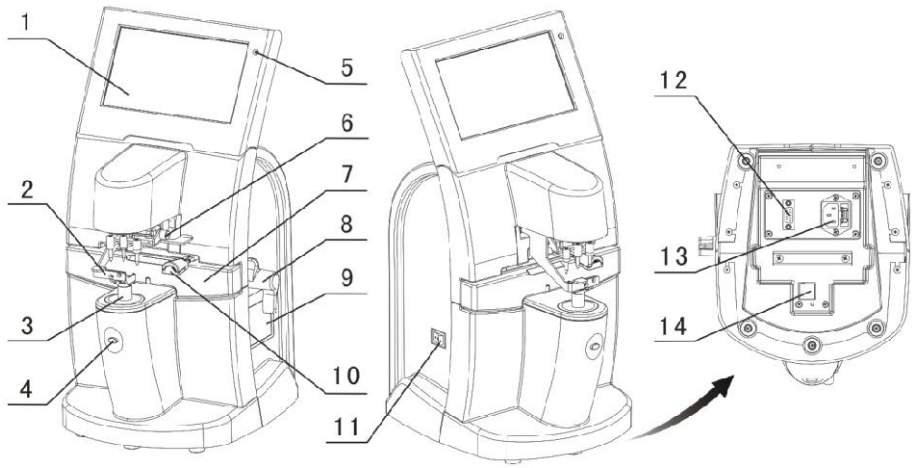
Environment temperature: 0 ～ 45℃

Humidity: <=85%

Air pressure: 500～1060 HPa

2. The external components and maintenance

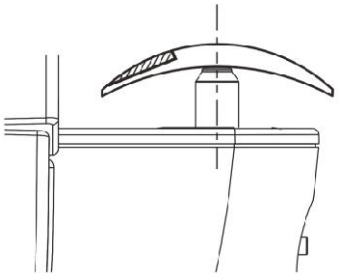
2.1 Configuration



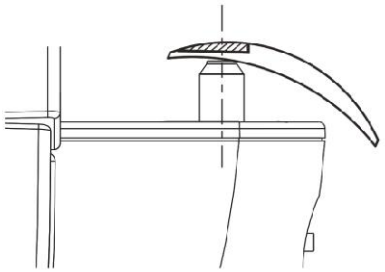
1. Touch screen
2. Pressing mechanism
3. Lens support
4. Memory button
5. Power indicator
6. Marking mechanism
7. Lens flapper
8. Flapper handle
9. Printer
10. PD measurement mechanism
11. Power switch
12. RS232 connector
13. Power port
14. Internet port

2.2 Install the lens

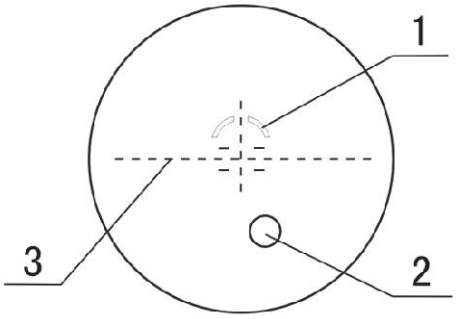
2.2.1 Bifocal lens hyperopia zone installation drawing



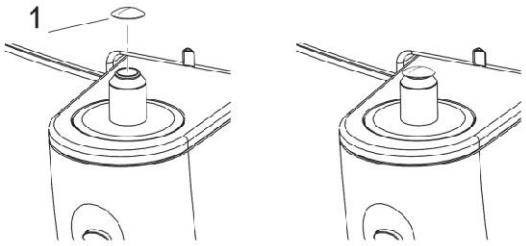
Bifocal lens myopia zone installation drawing



2.2.2 Progressive lens



2.2.3 Contact lens installation



2.3 Printer paper installation

2.3.1 Open the printer cover

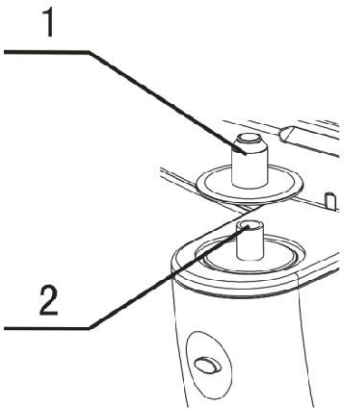
2.3.2 Put in the printing paper in the relevant position

2.3.3 Close the printing cover

2.4 Maintenance

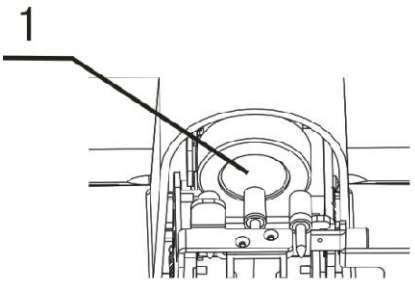
2.4.1 Protect and clean the lens 2 regularly, remove the lens support 1 during cleaning, wipe lightly with a soft brush or lens paper to clean the dust or grease on the protection lens surface.

Attention: Do not scratch the protect lens, this lens scratch will reduce the accuracy of measurement seriously.
Install back the lens support must be towards in place, in case of measurement error.



2.4.2 Check the lens 1 regularly, use the soft brush or lens paper to clean lightly when there is too much dust.

Attention: Do not scratch the lens in the shot



2.4.3 Replace the printer paper

If the screen shows lack of printing paper, please install and replace printing paper as above instruction

2.4.4 Replace the fuse

Replacing the fuse should be shut off the power switch firstly, and unplug the power supply, then pull out the fuse tube at the bottom of the power outlet, at the same time we should pay attention to the fuse tube models, namely the withstand voltage and current value should comply with the requirements.

2.4.5 Clean the surface

Please wipe the surface soft dry cloth. If the blot is serious, please use a cloth with neutral detergent to wipe gently, then wipe dry with a cloth.
Note: Do not use organic solvents and gasoline to wipe.

3. Screen Display Introduction

3.1 Measurement screen

There are three measurement screens, Auto measurement screen, Normal measurement screen, Progressive power lens (PPL) measurement screen.

3.1.1 Normal measurement

The screen in below figure 5.1 shows the normal measurement screen to measure single vision lenses or bifocal (trifocal) lenses. All measurement screens can test single lens or R/L state lens (Frame lens). Below is the brief introduction for all elements in the measurement screen.

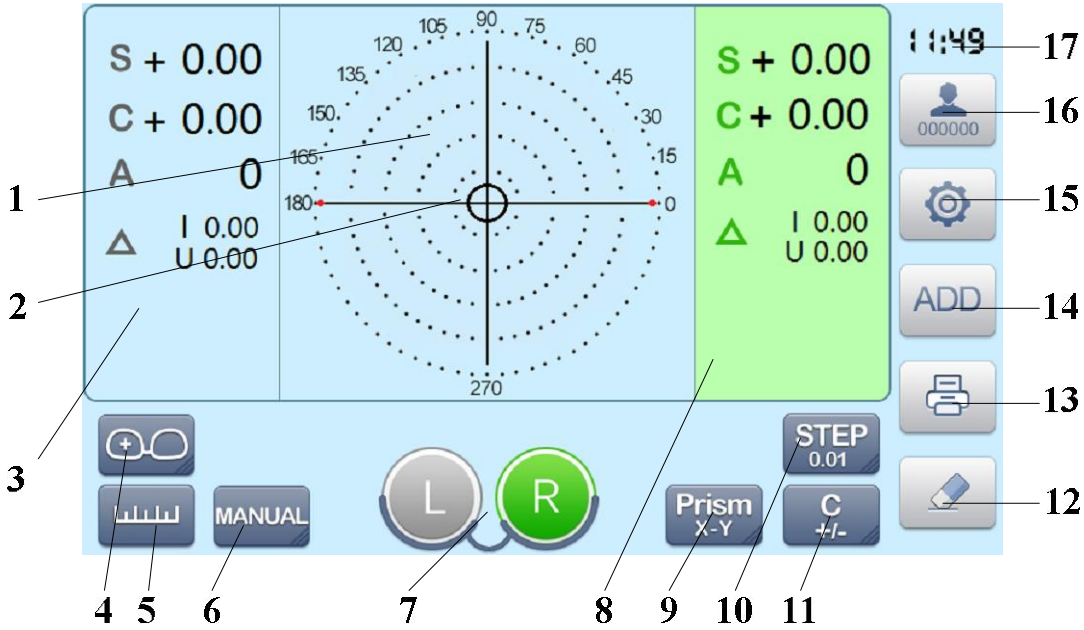


Figure 5.1 normal measurement screen

1. Lens Optical Center Indication

   The lens optical center display in this zone, when test single vision lens, it requires to aim the optical center at the target center. When test the lens with

cylinder, the target in the display zone can also show the axis of cylinder faintly.

2. Optical center Target

   Shows the optical center of a lens to be measured. When test single vision lens from misaligned to aligned, the target will change from circle to big cross. See sheet 5.1:

Figure 5.1 Optical center Target type

Misaligned	Close to Aligned	Aligned
	 (green)	 (blue)

The red point in the symmetric position of cross means the cylinder axis.

3. Left Lens Parameter display area

   The left lens display area can shows the SPH, CYL and AXIS, and you also can choose to shows the Prism and ADD type. In Single lens mode, when this zone is not chosen, all parameter show “0”.

4. Measurement Screens Switch Buttons

   There are three measurement screens, Auto measurement screen, Normal measurement screen, Progressive power lens (PPL) measurement screen. The switch buttons shows as below: sheet 5.2. The icon button change might be cause Lens Optical Center Indication and lens parameter Indication icon change.

Sheet 5.2 Measurement Screens Switch Buttons Change

	Auto measurement Under this mode, the measurement screen automatically test the normal lens or PPL, after recognize lens type successfully, the program will proceed into corresponding measurement. When the far zone or near zone of PPL close to the optical cover plate, it may not test the PPL.

	Normal measurement Measurement of single vision lenses or bifocal (trifocal) lenses
	Progressive lens measurement Measurement progressive lenses

5. PD button

   Press this button, the program will come to the PD measurement screen.

6. Auto Memory

   Press this button, the program can quickly setting memory way, auto memory or manual memory. See sheet 5.3:

Sheet 5.3Function of memory buttons

	When memory way is Manual memory, when Optical Target meets the testing requirement, you can press manual memory button under the optical system.
	When memory way is Auto memory, according to the menu setting “auto memory” relevant setting, you can choose close to Aligned + or Aligned + auto memory.

7. **Measurement mode/switch button**

   Shows the measurement mode is under Left lens, Right lens or Single lens. The measurement pictures are as below: Sheet 5.4.

Sheet 5.4. measurement mode pictures

(grey)  (green)	Single lens mode, and under measurement condition
(grey)  (blue)	Single lens mode, and under memory (already read)

(green)  (grey)	R/L lens mode (or Frame lens mode), and Left lens under measurement, but right lens is not measured.
(green)  (blue)	R/L lens mode (or Frame lens mode), and Left lens under measurement, right lens is under memory (already read)
(grey)  (green)	R/L lens mode (or Frame lens mode), and Right lens under measurement, but right lens is not measured.
(blue)  (green)	R/L lens mode (or Frame lens mode), and Right lens under measurement, Left lens is under memory (already read)
(blue)  (blue)	R/L lens mode (or Frame lens mode), and Left and Right lens are both under memory (already read)

In Single lens mode, if you want to enter the R/L lens mode(Fram lens measurement), you can directly press  、  or  . If you want to go back to Single lens mode, press  .

8. Right Lens Parameter display area

   Right Lens Parameter Indication, can display basic parameter: SPH, CYL, and AXIS, can also choose to show Prism and ADD type. If this region is not chosen and not memory situation, this region will show as not chosen and all parameter is “0”.

9. Prism Display Switch button.

   This button is used to change the prism display mode, when press the button, you can choose prism off, prism P-B, prism showing way: BASE I/O U/D(here simply show as X-Y). See sheet 5.5:

Sheet 5.5 Prism Display Switch button.

	Switch off the parameter display.
	Prism shows: P-B Mode, it displays in polar coordinates (P-R). Use polar axis to show prism base direction Use polar diameter length to show the prism absolute value
	Prism shows: BASE I/O U/D mode, it has prism base towards to inner side, prism base towards to outside, prism base towards upper and prism base towards downside. It is another display way for Cartesian coordinates(X-Y)

10. Step button.

    Press the button, you can choose the step in 0.01、0.06、0.12and 0.25 as the parameter change value.

11. CYL symbol Switch Button.

    Can choose the display CYL symbol, +/-(both), + and -.

Sheet 5.6 CYL Symbol Switch Button.

	According to current CYL measurement result, the CYL power symbol might be + or -.
	Setting current CYL measurement display as +, and use symbol calculation to change the CYL display data.

	Setting current CYL measurement display as -, and use symbol calculation to change the SPH display data.

12. Clear button

Press this button can clear the memory data. If the single lens mode is open, measurement interface will showing single mode when press this button. If the single lens mode is close, measurement interface will showing right eye mode when press this button

13. Print button

Print out the memory data, but this button is invalid if measurement data is not memory.

14. Manual ADD button

This button is work when the “Auto ADD” is close. When measurement bifocal or progressive lenses in normal measurement interface and move the lens to intermediate or near portion after memory the far point power, display area will display ADD power when we press this button.

15. Menu interface switch button

Press this button to switch the menu interface.

16. User button

TL6500 series do not have this function at present.

17. Time button

Display the current time, time can be setting in information input menu.

3.1.2 Progressive lens measurement interface

Figure 5.2 and figure 5.3 progressive lens measurement interface. Most of the item is the same as normal measurement interface, the different is optical center

indicate area, as showing in below.

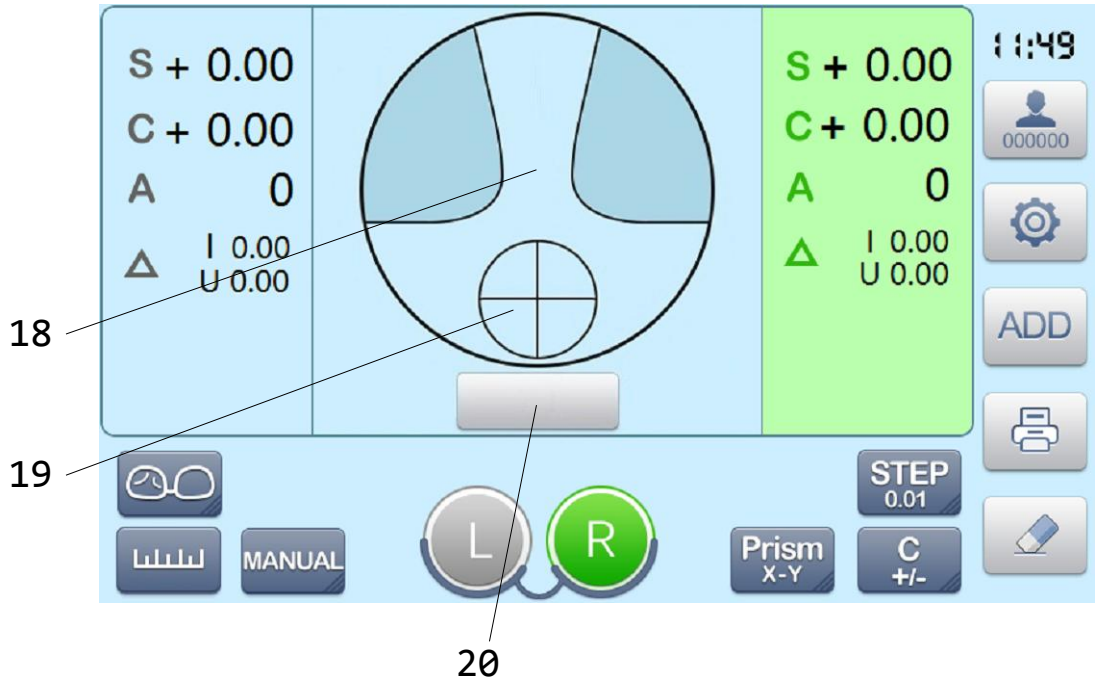


Figure 5.2 progressive lens measurement interface

18. Optical center display area in progressive lens

    Progressive lens graph divide into distance portion, near portion and intermediate portion. intermediate portion is between the distance portion and near portion, and left/right side is non-measurable optical aberration portion.

19. Distance portion

    Cross curve indicates the center of distance portion, move the cross target to this center when measurement the distance portion of Progressive lens.

20. Guidance direction arrow area

    Arrow direction indicates the moving direction to the center.

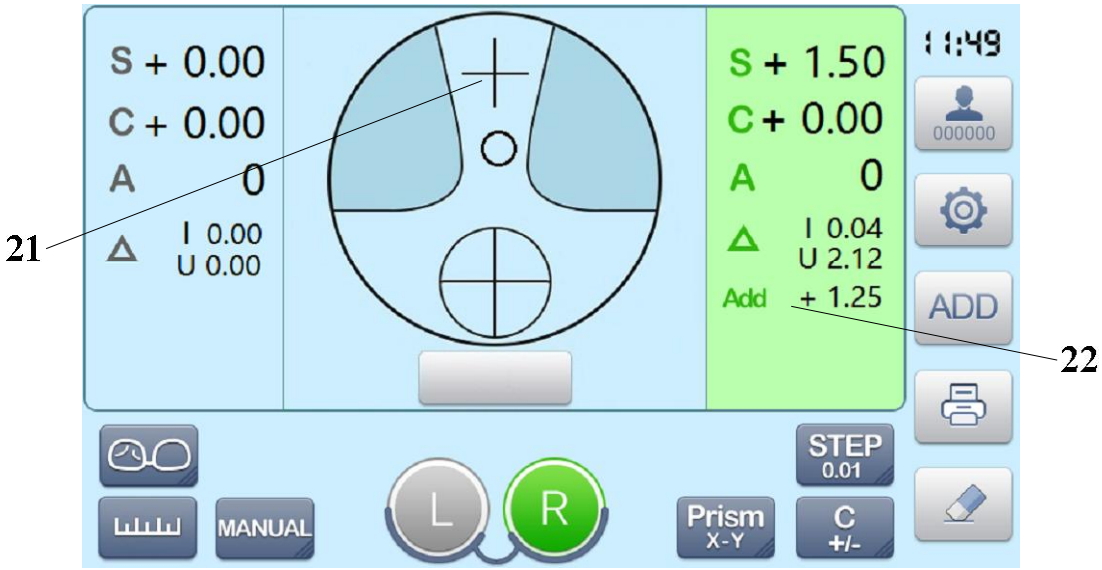


Figure 5.3 progressive lens measurement interface

21. Near portion

Cross curve indicates the center of near portion, move the cross target to this center when measurement the near portion of Progressive lens.

22. ADD

ADD show the power of near portion, the display mode can be change by “Near” item in display menu.

3.2 Menu display interface

Menu display interface divide into five pages, it contains display parameter setting menu, measure parameter setting menu, function parameter setting menu, output parameter setting menu, message input parameter setting menu. Figure 5.4 is the display parameter setting menu, and below is description of the items.

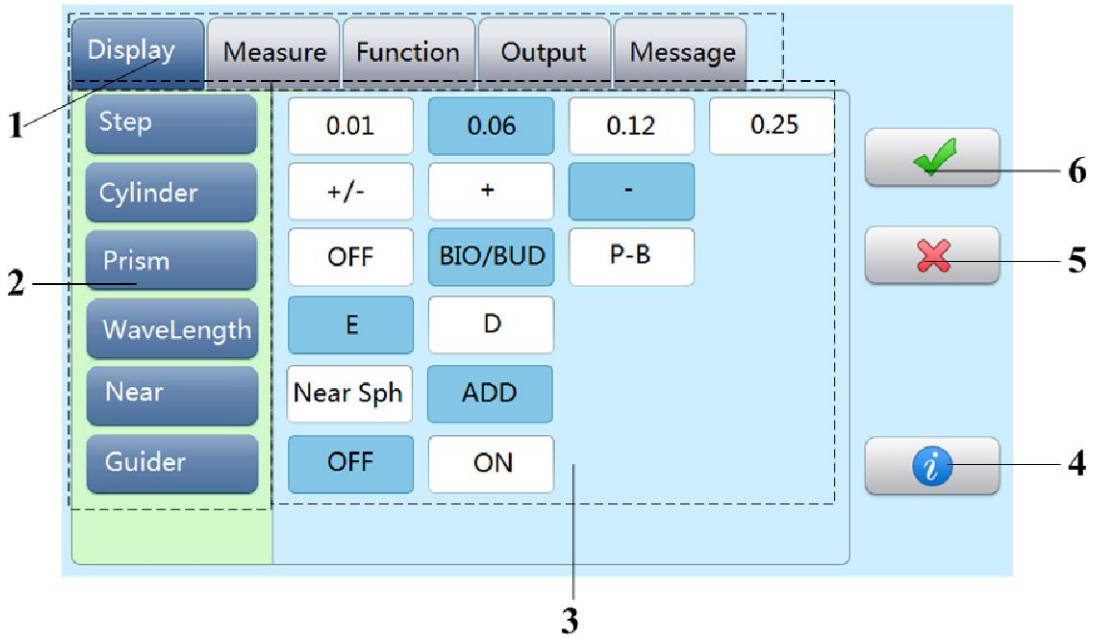


Figure 5.4 display parameter setting menu

1. Menu page shift button

Click these button can shift to the corresponding page, display parameter setting menu will display when enter into the menu interface for the first time

2. Parameter name

Display the name of parameter

3. Parameter option

The corresponding line is the optional items, click the button to option the items, and the background will become to blue. In additional, virtual keyboard will appear for input information when click the information display area in information input interface.

4. Information button

Click this button will show software version and other information.

5. Exit without save the setting

Click this button to back to the measurement interface, all the setting in menu will not be saved.

6. Exit and save the setting
   Click this button to back to the measurement interface, all the setting in menu will be saved.

3.3 PD interface

Click PD button in measurement interface will enter into PD display interface as show in figure 5.5, PD and pupil height of the mounted lens can be measure when align the marked lens and ruler. Below is brief introduction of the component in PD display interface.

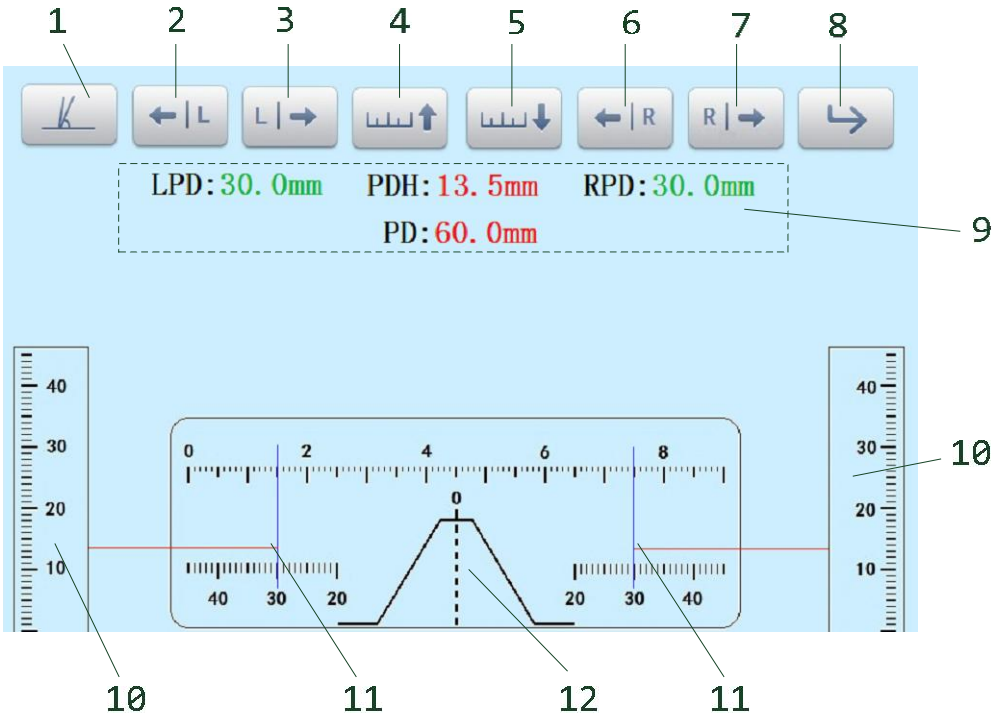


Figure 5.5 PD display interface

1. Protractor button

   A Protractor will appear after click this button, it could be uses to measure the degree of crook of the frame roughly.

2. Left shift button of left eye guides

   Click this button, the blue vertical guides will shift to left as show in mark 11 in figure 5.5

3. Left shift button of right eye guides

Click this button, the blue vertical guides will shift to right as show in mark 11 in figure 5.5

4. Shift up button of horizontal scale
   Click this button, horizontal scale will move up as show in mark 12 in figure 5.5

5. Shift down button of horizontal scale
   Click this button, horizontal scale will move down as show in mark 12 in figure 5.5

6. Left shift button of right eye guides
   Click this button, the blue vertical guides will shift to left as show in mark 11 in figure 5.5

7. Right shift button of right eye guides
   Click this button, the blue vertical guides will shift to right as show in mark 11 in figure 5.5

8. Exit button
   Click this button to exit to measurement interface

9. Data display area
   All the guides and moving states of rulers will display at this area, contains PD、PDH、LPD and RPD data.

10. Pupil height ruler
    To measure the distance between the bottom and red horizontal guides in mark 11 in figure 5.5, this data is PD height.

11. Guides
    Red line is horizontal guides, blue line is vertical guides, alignment the point

of intersection to the marked cent.

12. Level ruler

Level ruler is consist of PD ruler, LPD/RPD ruler, nose pad diagram. Please alignment the nose pad of frame to nose pad diagram, and try to make the center alignment the 0 scale.

3.4 Information input interface

Information input interface is showing in below figure 5.6. Time/ user information/ machine information all can realize in this interface. This interface can be called out in information input menu. Below is description about the items in this interface.

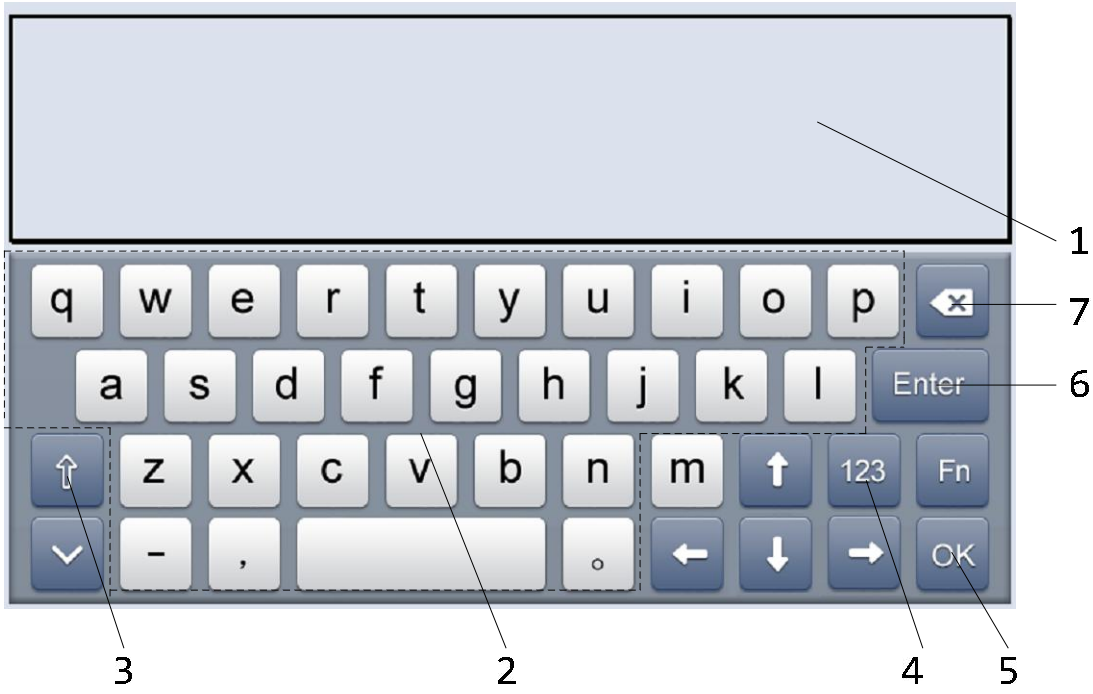


Figure 5.6 Information input interface

1. Display area
   Could display 5 line and 24 row characters, it means 120 characters.
2. Keyboard

We can input 26 capital and small English letters, numbers and punctuation.

3. Case shift button
   If current is small English letter, press this button to shift to capital letter, and vice versa.
   This button is invalid if current is number and punctuation condition
4. Number shift button
   If current is not number input condition, press this key to shift to number input condition, and vice versa.
5. Confirm and exit button
   Save the input information and back to input information menu interface by this button.

6. Enter
   Display the information in new line.
7. Delete
   Press this button to delete the front character. Note: if long press this button more than 2 second, all the input information of this item will be deleted.

4 . Operation instruction

4.1 Operation before measurement

4.1.1 Turn off the power switch(at 0 position), then connect the device with wall outlet by specified power cord.

4.1.2 Turn on the power switch(at 1 position), the follow start screen in figure 6.1 will show.

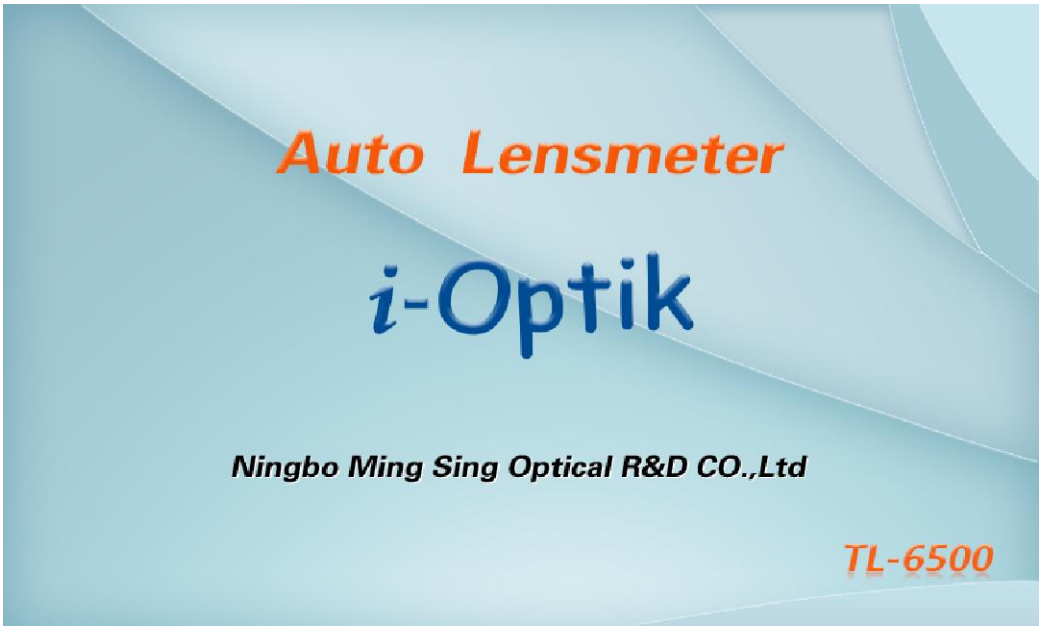


Figure 6.1 Start screen

4.1.3 Measurement interface as showing in figure 6.2 will appear after initialization complete(about 6 seconds). Measurement interface mode can be set in “measurement mode” item in measurement parameters menu.

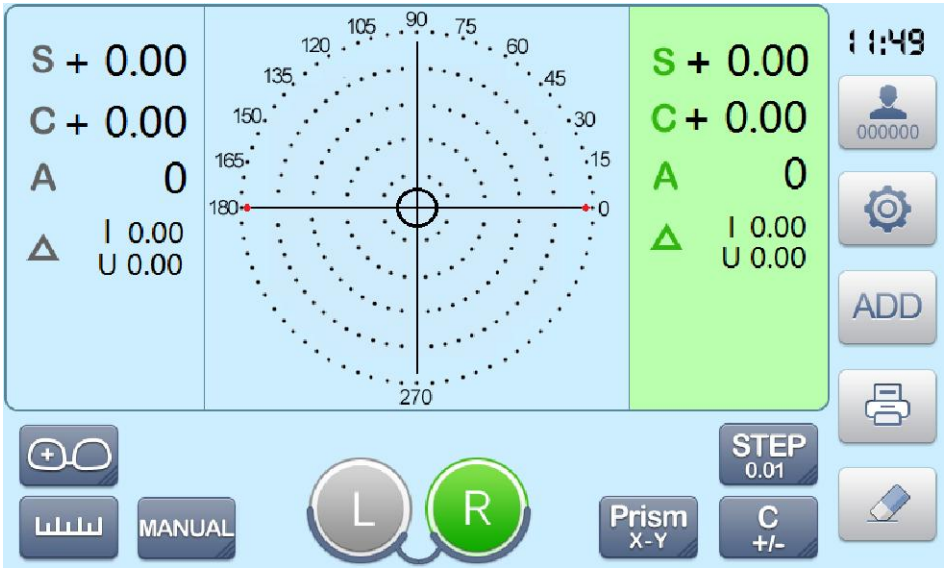


Figure 6.2 Measurement interface

Note: Red color error display will appear in the lower of measurement interface if lens put on the nosepiece when start the device, or too much dust and

other abnormal conditions.

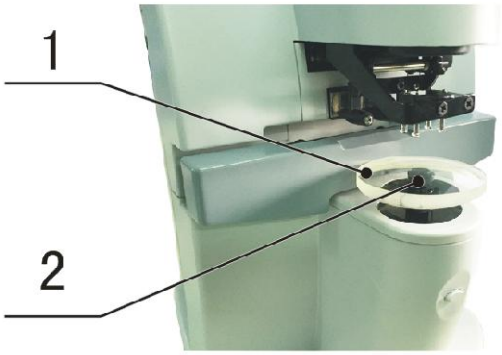
Most of the error display will disappear if we solve the problem, such as move away the lens when start the machine or clean the surface of optical system. Some of the error can be solve after restart the device.

4.2 Setting lenses

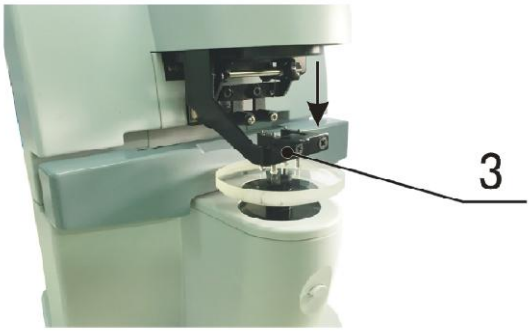
Please wipe off the dust on the optical house and cover lens, to make the measurement accuracy. Make the concave side of the lens close to the nosepiece.

4.2.1 Setting uncut lenses

4.2.1.1 Place the lens center on the nosepiece with the(part 2 in follow figure) convex side up(part 1 in follow figure).



4.2.1.2 Fix the lens with the lens holder (part 3 in follow figure).



4.2.2 Setting mounted lenses

1. Place the frames on the nosepiece with the front surface up.

2. Pull the lens table lever toward yourself until it touches the bottom of the frames.

3. Fix the lens with the lens holder (part 3 in follow figure).

4.3 Measuring single vision lens

1. Measuring interface specify the work type of the testing lens

Choose single vision lens, or left and right eye lenses (frame), frame glasses needs to specify the current lens under test is right or left.

Make the working condition display and switch button which under the measuring interface showing as following figure 6.1.

Figure 6.1 Specify work type of the tested lens before measurement

(grey) (green) 	single vision lens mode choosing
(green) (grey) 	left and right eye lenses mode choosing, and choose left eye working
(grey) (green) 	left and right eye lenses mode choosing, and choose right eye working

Specified reading type, choose automatic reading or manual readings as stated in figure 5.3.

Specified prism display type, choose closed、P-B or BASE I/O U/D display as stated in figure 5.4.

2. Place and move the lens to bring the target close to the center of the alignment circle. as stated in figure 6.3, let the target ○ close to the center of the alignment circle.

When the lens close to the center, target ○ will changed to ＋(green)。

Keep moving the lens, when the lens keep in center of the target, it will changed from ＋(green) to ＋(blue)

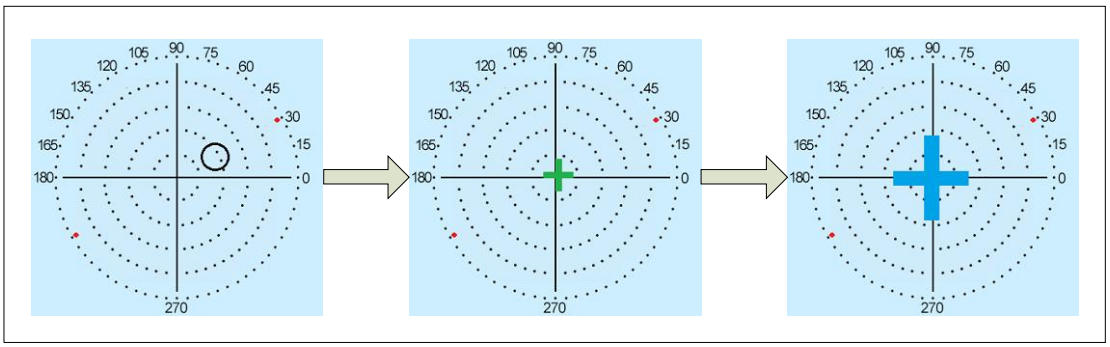


Figure6.3 Move the lens to make it alignment the target

3. If choose manual reading mode, press the button at the bottom of the nose pad.

If choose the automatic reading mode, according the setting of "automatic memory" item in measurement parameter settings menu, automatic reading when close to the center(target is green) or alignment the center(target is blue). Then single vision lens finish measurement, and parameter display area changes to memory (finish reading) state.

4. If the current working state is right and left lens, it can measure another lens at this time.

According to the setting of the "automatic R/L" item in measurement parameter menu, to decide whether switch to another lens measurement automatically after take out the lens .If the "automatic R/L" item is not open, then you need to manually click the other side working state display and switch button.

5. Change cylinder display symbols according to the demand

In memory (finished reading) state, press cylinder symbol switch also can change the display symbol, cylinder lens symbol changes can refer to the figure 5.6.

4.4 Measuring multifocal lens

Multifocal lens mainly divided into bifocal and trifocal lenses. Bifocal lens containing distance portion and near portion, and trifocal lens add the intermediate

portion between distance portion and near portion on the basis of bifocal lens. Measuring multifocal lens should measure the distance portion firstly and then measure the near portion.

4.4.1 Measuring bifocal lens

1. Measuring interface specified the work type of the lens

   Specify method is show in chapter 1 of figure 6.3 measuring single lens

2. Put distance portion of bifocal lens on the cover of nose pad.

   Note convex side face up, near portion inward, distance portion outwards

   Move lens to make the target ○ change to ✚ (green)。

3. Far vision area parameters

   Far vision area parameters reading has three ways: automatically read, ADD button read, external button read.

   To use the automatic reading function, need to set "memory" item in measuring parameters menu as auto, and set the “automatic memory" item as close to the center in measuring parameters menu. Set the measuring parameters “automatically ADD " as (ON) status. After setup is finish, when the target moves to close to the center, lens parameters will be read automatically. The parameter display area will be displayed as memory (finish read).

   To used the ADD button reading function, need to set the measurement parameter “automatically ADD" to OFF, After setup is finish, when the target moved to close the center position near, then press the ADD button under measure interface. Interface will be displayed as shown in figure 6.4.

   If use the button on the bottom of nose pad cover to read far vision area parameters, firstly we need to set measuring parameters menu "automatic ADD" to ON. And then we can press external reading buttons directly when the target moves to close the center. Then the parameter display area will be displayed as memory (finish read).

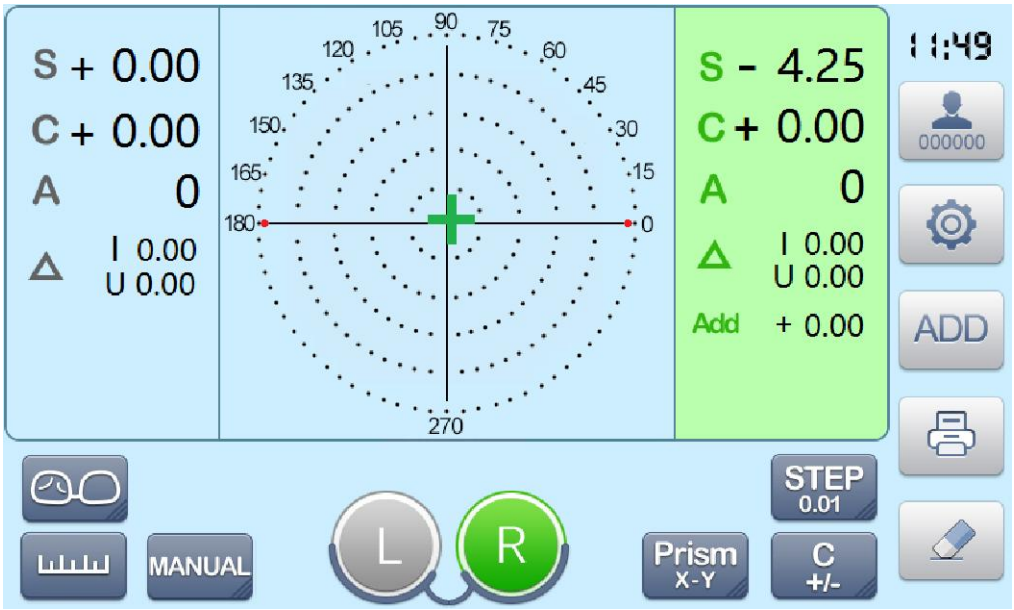


Figure 6.4 ADD display under measuring interface

4. Measuring near portion power

Move lens to the near portion, if the measurement parameters “automatically ADD” is ON, when detected ADD in near portion, the parameters display area will switch from memory (finish read) state to working condition and increase ADD data as shown in figure 6.4. Continue to move the lens, manually press the read button below nose plate when ADD power is stable. Now near portion completes measurement, parameters display area changes to memory (finish read) state.

5. If the current mode is right and left eyes, another lens can be measured at this time

The ways is described in section 4 in 6.3 measuring single vision lens

6. Change cylinder symbols according to the demand

The ways is described in section 5 in 6.3 measuring single vision lens

4.4.2 Measuring trifocal lens

1. Measuring interface specify work type of lens

The way is the same as section 1 in 6.4.1bifocal lens.

2. Put the distance portion of the trifocal lens on the nose piece.

The way is the same as section 2 in 6.4.1bifocal lens.

3. Distance portion parameter reading

The way is the same as section 3 in 6.4.1bifocal lens.

4. Intermediate portion reading

Move the lens to the intermediate portion, if the measurement parameters “automatically ADD" is ON, when detect the ADD power in intermediate portion, the parameters display area will switch from memory (finish read) state to the working condition and increase ADD data as shown in figure 6.4, need to manually press read button at the bottom of the nose piece, the parameters display area will be displayed as memory (finish read). If measuring parameters menu "automatic ADD" is OFF, we need to press the ADD button on the measuring interface, as shown in figure 6.5

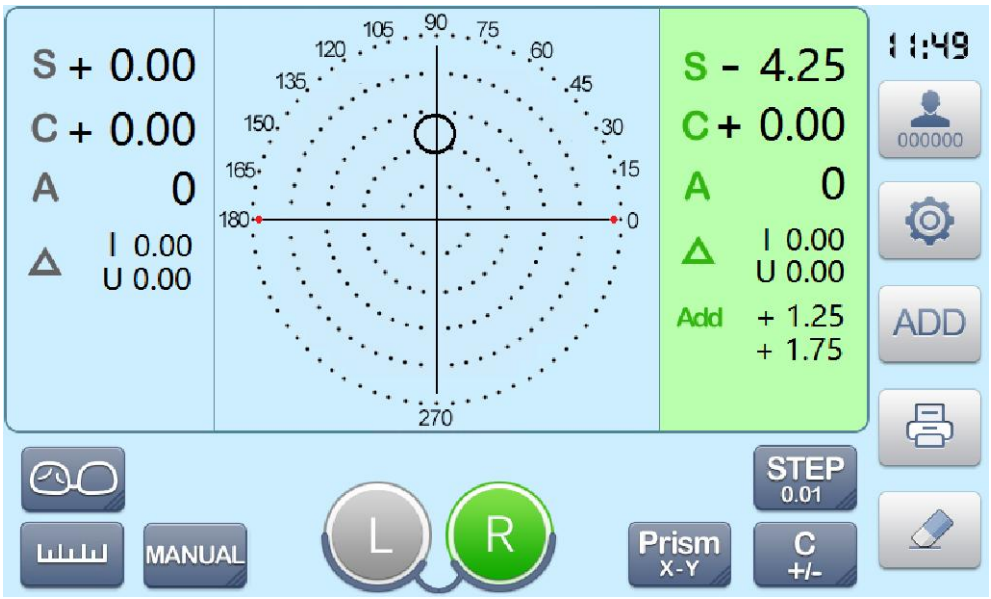


Figure 6.5 The second ADD display in measuring interface

5. Measuring near portion power

Move lens to the near portion area, manually press the read button at the bottom of the nose piece when present ADD power is stable. Now complete measurement the near portion, parameters display area changes to memory (finish read) status.

6. If the current mode is right and left eyes, another lens can be measured at this time

The ways is described in section 4 in 6.3 measuring single vision lens

7. Change cylinder symbols according to the demand

The ways is described in section 5 in 6.3 measuring single vision lens

4.5 Measuring progressive lens

Progressive lens compose of distance portion, near portion and progressive portion. Measurement steps must be in accordance with the distance portion area measure firstly, then measure near portion. Under automatic measuring interface, need to aim the progressive portion of progressive lenses to the nose piece to judge for progressive lenses, if under other measuring interface, we need to switch the measurement interface to the progressive measurement interface. As shown in figure 6.6 partition map of progressive measurement.

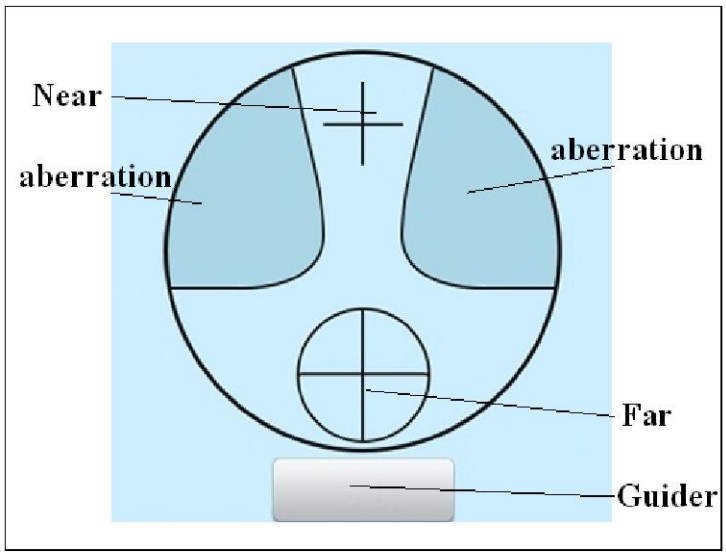


figure 6.6 partition map of progressive measurement

4.5.1 Measuring uncut lenses

Method of measuring uncut lenses please refer to 6.4.1 measurement bifocal lens.

4.5.2 Measuring mounted lenses

1. Measuring interface specify work type of the lens

The way is the same as sections 1 in 6.3 Measuring single vision lens.

2. Place frame lenses

The step of placing frame lenses is mentioned in section 6.2.2, the difference is progressive portion is in the middle part, and put the progressive portion on the nose piece.

3. Measuring distance portion

Move the lens to distance portion to make the target close to distance portion, cross curve will change to (green).

Keep on move the lens slowly, green will change to blue

Guidance area will be displaying guidance arrow when moving the lens, as shown in figure 6.7, move lens according to the arrow direction.

If reading way is set as automatic reading, data of distance portion will be read automatically (memory). Otherwise you need to press the read button at the bottom of nose piece to read (memory).

When distance portion measure complete, it will switch to the near portion measurement mode to automatically.

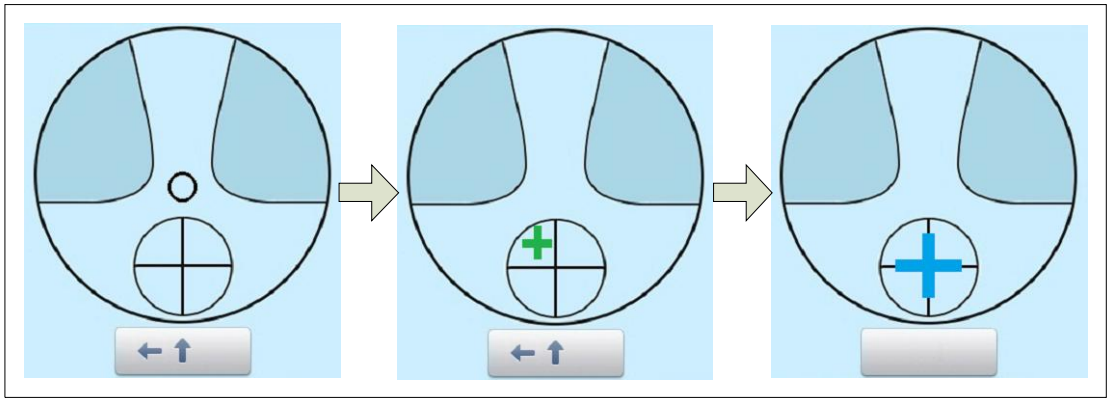


Figure 6.7 move lenses to make cross curve aim the distance portion center

4. Measuring near portion

Under the near portion measurement mode, lens parameter display area will add ADD data.

As shown in figure 6.8, move lenses slowly according to the guiding direction to make the cross curve to blue

If reading way chooses for the automatic reading, the data of near portion area will be read automatically (memory). Otherwise you need to press the read button at the bottom of the nose piece to read (memory) the data.

After near portion measurement completed, the bottom of display area will appear blue hint shows that measurement finished.

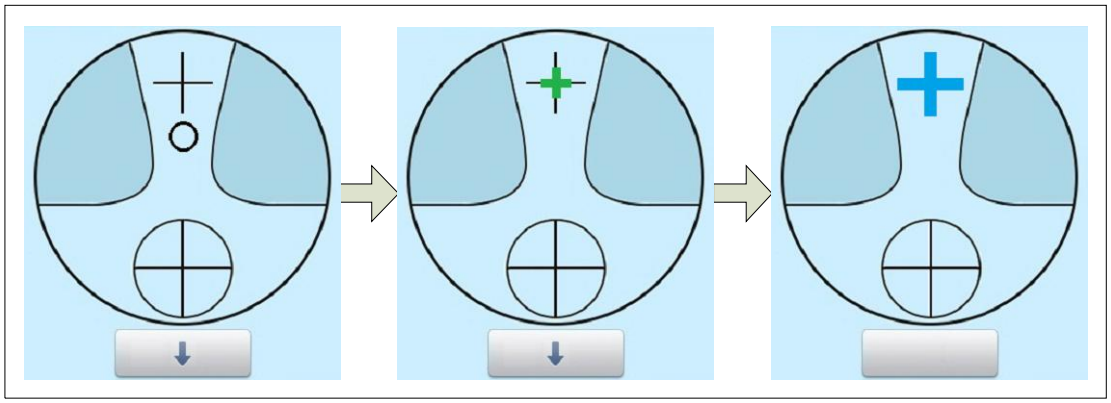


Figure 6.8 move lenses to make cross curve aim the near portion center

5. If the current mode is right and left eyes, another lens can be measured at this time

The ways is described in section 4 of 6.3 measuring single vision lens

6. Change cylinder symbols according to the demand

The ways is described in section 5 of 6.3 measuring single vision lens

Note: we can use the frame holder to move lens back and forth slowly in the process of measurement. Therefore, bottom of the frame racks needs to be close to frame holder.

4.6 Measuring PD of frame lenses

PD measurement interface as shown in figure 5.5.

1. Place a marked frame glasses as shown in figure 6.9

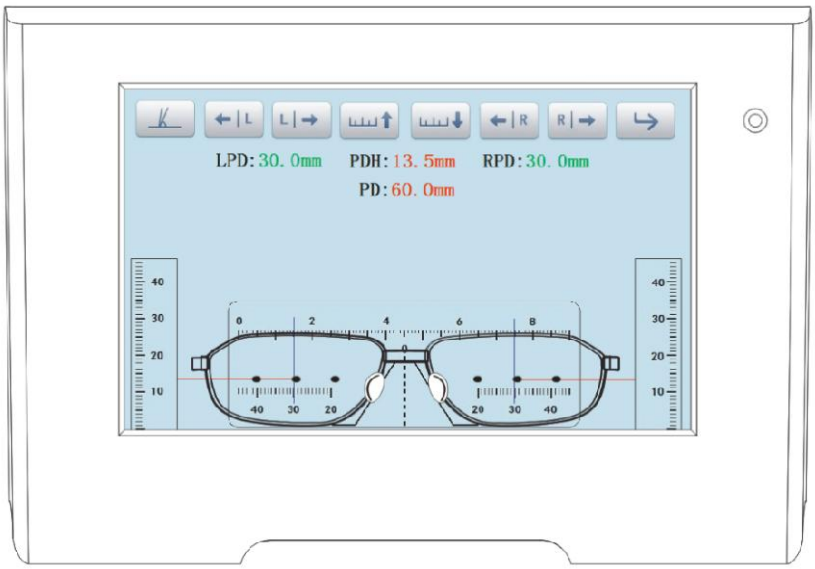


Figure 6.9 Place a marked frame glasses

2. Using the above button to adjust the vertical and horizontal reference

Make the marked center on the lens aim on the intersection of the horizontal and vertical reference

3. Value read

Respectively read of the LPD, RPD, PD and PDH values below the button. If the height of PD different, we can read it in two times, firstly read left PDH, then adjust to aim horizontal reference line, then read the right PDH.

4.7 print operation

After measurement completion, press print button  on the right side measuring interface can print the measurement result (some model of the machines with print function), print sample as shown in figure 6.10.

Print content can set according to output parameters menu, such as time display, user information, prism display and etc.

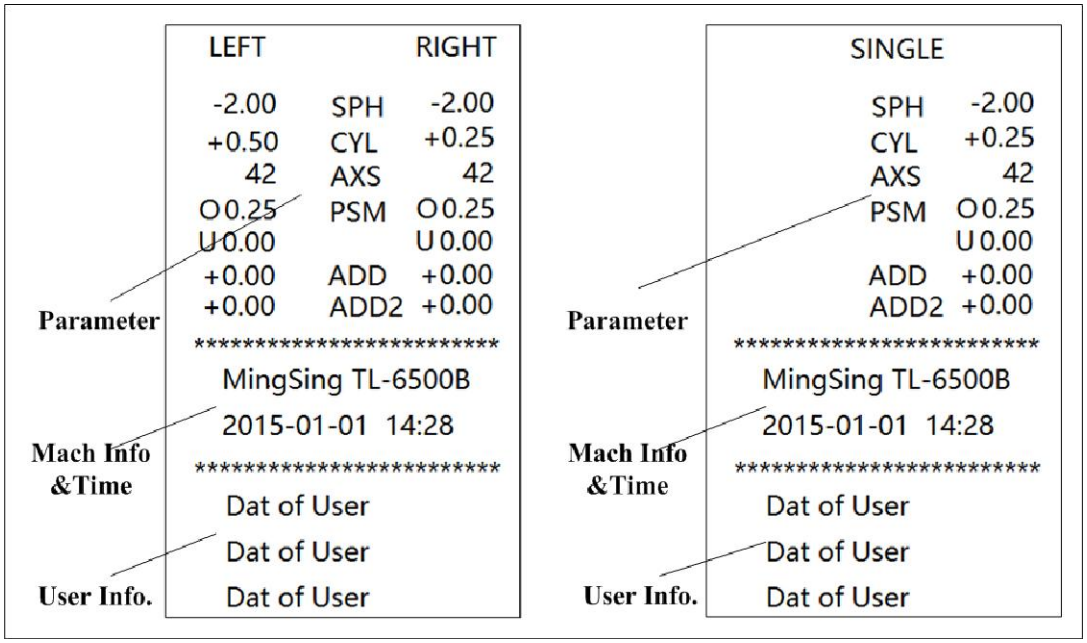


Figure 6.10 print sample

4.8 Other operation

4.8.1 Menu interface operation

Press the setting menu  to enter into the menu setting interface, click the screen to choose menu under the menu interface, after finishing option click  to save and exit or  not save and exit. Now describe each menu as follows:

1. Display the parameter menu

   Parameter configuration menu as shown in figure 6.11

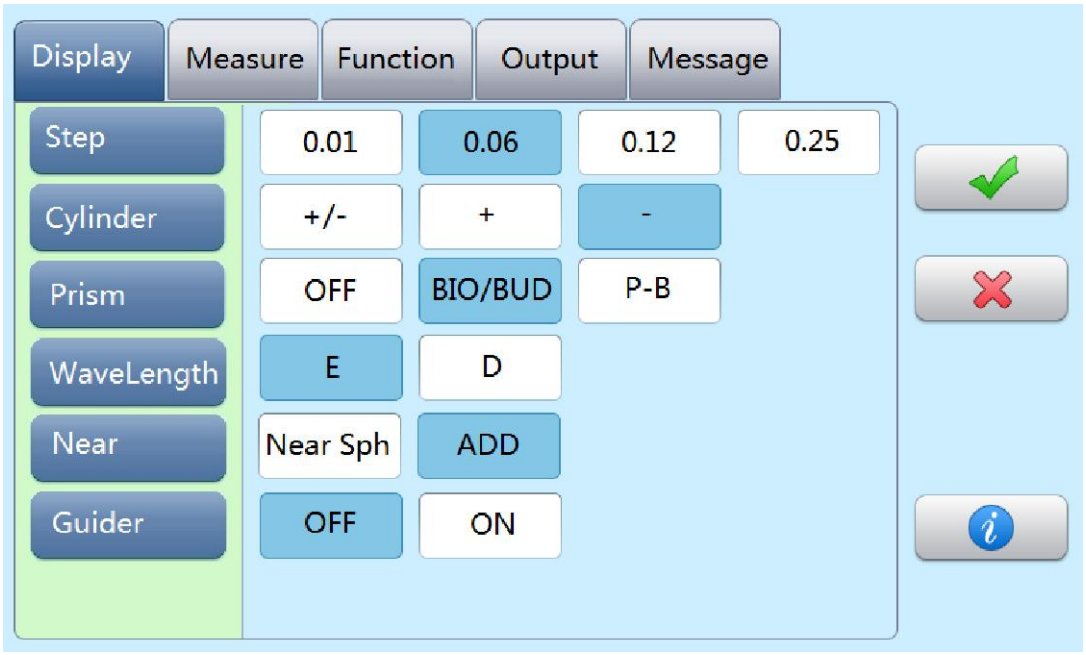


Figure 6.11 Parameter configuration menu

Parameter list as shown in 6.2

List 6.2 parameter configuration menu list

Parameter	Configuration	Description
Step length	0.01,0.06,0.12, 0.25	precision/minimum resolution of measured data
cylinder	+/-, +, -	used to select cylinder display mode
prism	OFF, BIO/BUD, P-B	Prism value display method
Wavelength standard	Standard E, standard D	Light source wavelength standard choice
Near vision reading	Near power, distance power	ADD or SADD
Center guidance	OFF, ON,	Progressive lenses guidance arrow open or close (tentative)

2. Measurement parameter menu

Measuring parameters of the menu as shown in figure 6.12

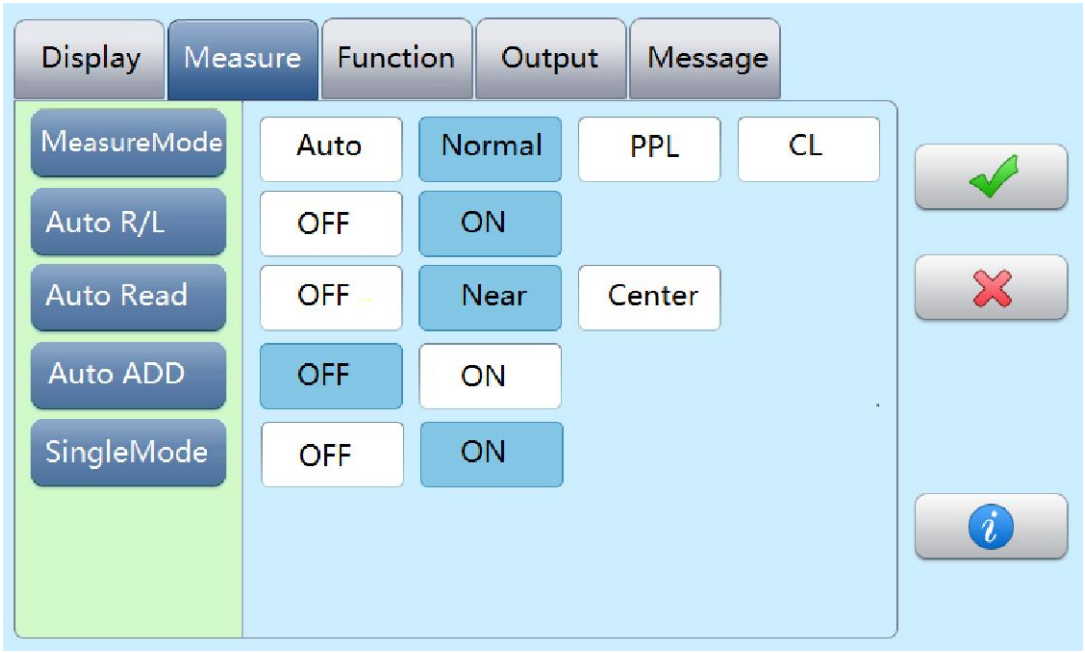


Figure 6.12 Measurement parameter menu

Parameters list as shown in figure 6.3

Figure 6.3 Measurement parameter menu list

Parameter	Configuration	Description
Measurement mode	Auto/ normal/ progressive/ contact	measurement mode selection of the measuring interface
Auto R/L	OFF, ON,	Whether automatic switch frame glasses to left/right work mode
memory	Manual, automatic	Whether to use the automatic reading function
automatic memory	OFF, close the center, aim the center	choose reading conditions when automatic reading,
automatic ADD	OFF, ON,	Whether ADD automatic judgment
Single lens mode	OFF, ON,	Whether to use single lens mode

3. Function parameter menu

   Function parameter menu as shown in figure 6.13

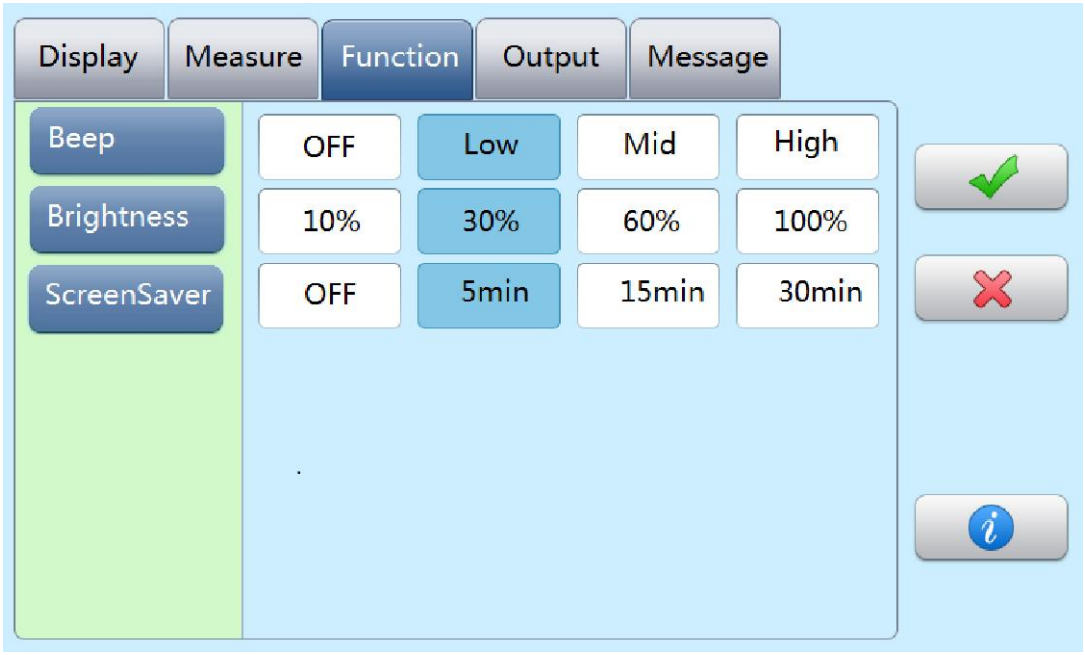


Figure 6.13 Function parameter configuration menu

Parameters list as shown in 6.4

Figure 6.4 measuring parameters menu list

Parameter	Configuration	Description
voice	OFF, low, medium, high	Button and measurement complete volume adjustment
Light intensity	10%, 30%, 60%, 100%	LCD backlight brightness adjustment
Screen protection	OFF, 5mins, 15mins, 30mins	The time without operation to enter into the screen

4. Output parameter menu

Output parameter menu shown in figure6.14

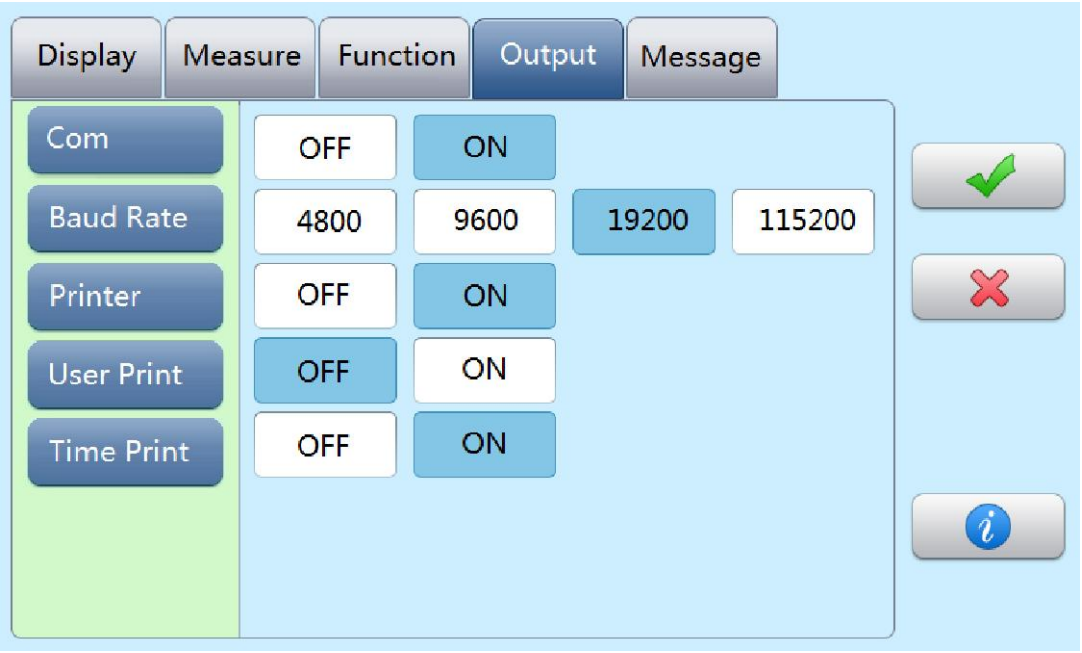


Figure 6.14 Output parameter configuration menu

Parameter lsit as shown in 6.5

Figure 6.5measure parameter menu configuration list

Parameter	Configuration	Description

Serial communication	OFF, ON,	Whether to open a serial port communication function
communication rate	4800,9600,19200,115200	Set serial port communication rate
print	OFF, ON,	Whether to open the print function (some models have only)
print client	OFF, ON,	Whether to print the customer information when print
Print time	OFF, ON,	Whether to print current time

5. Information input menu

Information input menu as shown in figure 6.16

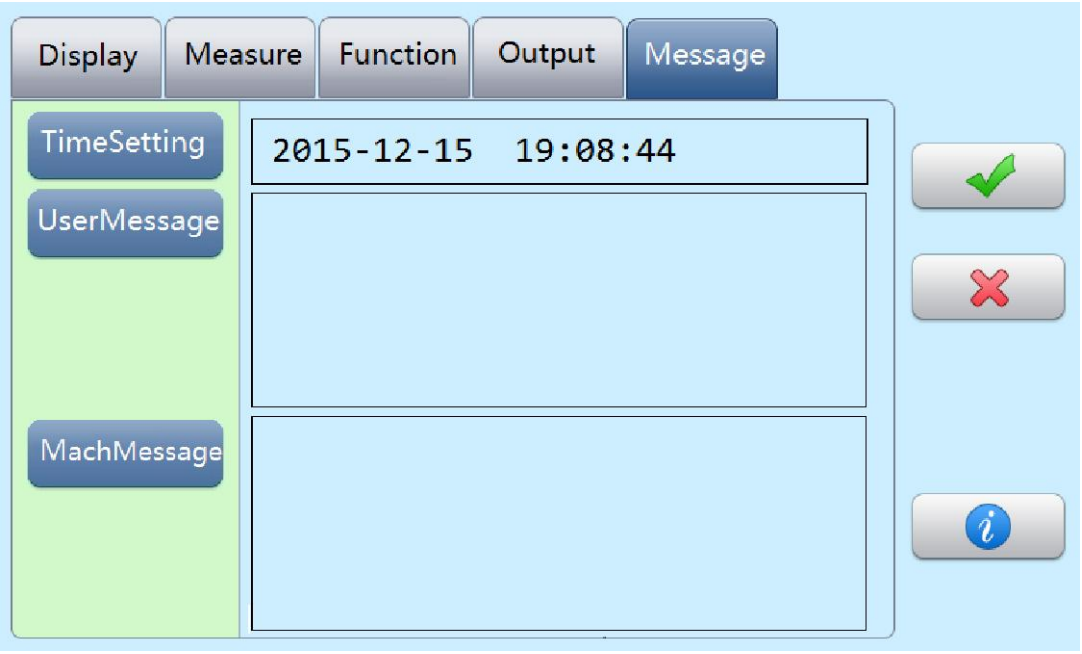


Figure 6.16 information input menu

Click on any input window of the information input menu can operate with virtual keyboard. Please refer to section 5.4 for the operation of the virtual keyboard.

4.8.4 System software upgrade

To facilitate the software update, there is a upgrade interface below the host. Showing in figure 6.17 for the bottom host view

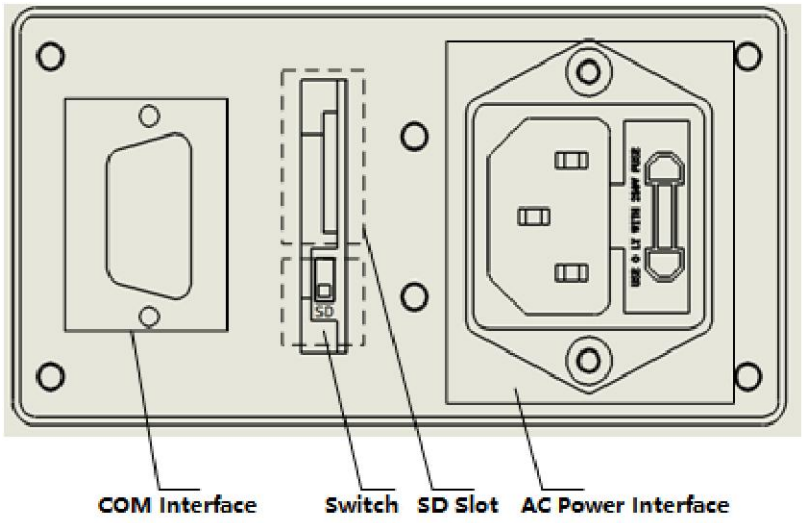


Figure 6.17 host bottom view

If need to upgrade software program

1. Please turn the power off (power switch in the right of the host, switch to 0)
2. Put TF card which have copy the latest version of the software into TF card slot
3. To dial the code switch to the position shown in figure 6.17
4. Turn on the power switch (power switch in the right of the host, switch to 1).At this time can hear the buzzer sound

Buzzer one time, and the screen display program updating. If update complete, you will hear buzzer consecutive for three times.

5. Turn the power off (power switch in the right of the host, switch to 0)
6. Pull out the TF card, to dial the code switch to the position as shown in figure 6.18, this program update is completed.

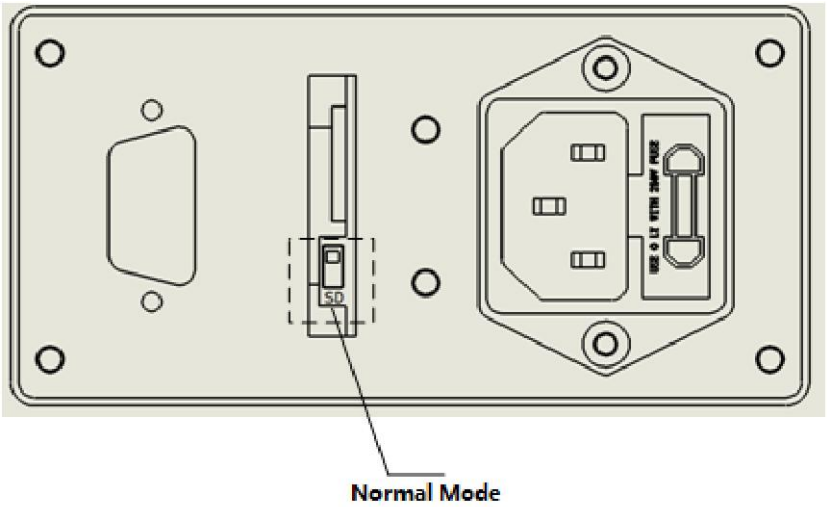


Figure 6.18 dial button in the normal working mode

Connect with other device

Coming soon!