

Operation Manual



■ Important Notice

Electronic wave from cellular phones, radio, remote controller and etc. can cause system malfunction on this product. Keep them away from the product.

We believe that the contents in this User Manual were carefully examined and overall precise. However, US Ophthalmic LLC will not be held responsible for any potential errors or omissions caused from the use of information in this User Manual.

US Ophthalmic LLC reserves right to modify product or product features at all times without notification, and these modifications might not be reflected on this document.



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1

Introduction

1.1. Equipment Summary

Auto Lensmeter LM-7800 is a machine to generate Sph, Cyl and Axis information of lens by measuring refraction of the lens. Auto Lensmeter LM-7800 can measure both unprocessed single lens and eyeglass lens with frame. Bi-focal lens or progressive lens can be examined using this equipment as well.

1.2. Classifications

- Classification Under the Provision of 93/42/EEC (MDD): Class I
- Protection Against Electrical Shock: Class I
- Protection against harmful ingress of water: Ordinary, IPX0
- Pollution Degree : II
- Degree of safety in the presence of a flammable anesthetic mixture with air or with oxygen or with nitrous oxide: Not suitable for use in the presence of a flammable anesthetic

2

Safety Information

2.1. Introduction

Safety is primary responsibility for all people. Safe use of this equipment is a concern for installer, user, operator and administrator. Any person shall be familiarized with the contents of this User Manual before installing, using, cleaning, repairing or adjusting this equipment and its supplementary items. It is most advisable for user to fully understand all contents in this User Manual, and operate safely on both patients and user. Thus, this chapter is dedicated to cautionary information and safety information. All users, operators and administrators shall be familiar to all information under "WARNING" and "CAUTION" in this User Manual, and pay special attention to them.

read, and pay special attention to them.



WARNING

“Warning” signifies a danger that can cause severe personal injury, death or serious property damage if not careful.

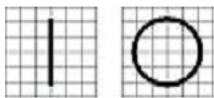


NOTE

2.2. Safety Symbols

The International Electro technical Commission (IEC) has established a set of signs on medical electronic devices by classifying caution or association of electronic danger. These classifications and signs are as the following.

- **Signs that Calls for Caution**



I and O on power switch signify for connection and disconnection of power.



This symbol signifies safety precaution. Users shall precisely understand the function of this symbol before using the product. The function is properly described on user or service instruction.



Consult instructions for use.



It signifies a safe earthing point where safe earth is fixated on sash. For safety, connect protective earth to conductive part of class I apparatus.



This side up





Fragile , handle with care



Do not use hand hooks



Keep DRY



Stacking Limit by Number



Keep away from sunlight

2.3. Environmental Symbol

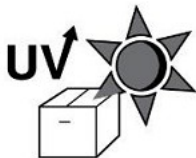
Avoid following environments for operation or storage of this equipment.



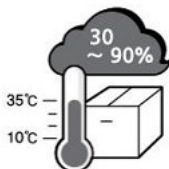
A place where the equipment can be exposed to water.
Do not operate the equipment with wet hand.



A place where the equipment can be exposed to direct sunlight.



A place where the equipment can be exposed to direct ultraviolet.



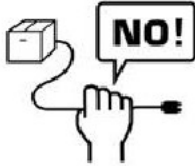
A place with rapid temperature fluctuation.
Optimal temperature is at 10°C ~ 35°C, and humidity at 30% ~ 90%.



A place nearby a heating apparatus.



Do not connect the AC power adapter before all parts are fully assembled. It can lead to a malfunction.



Always pull the power cord holding the plug and not the cord.

Avoid environments where the equipment can be exposed to excessive pressure or vibration.

Assured temperature and humidity for equipment during operation or non-operation are as follows:

Operation Condition Temperature 10°C ~ 35°C, Humidity 30 ~ 90%, Atmospheric pressure 800 ~ 1060hpa.

Transportation Condition Temperature -40°C ~ 70°C, Humidity 10 ~ 95%, Atmospheric pressure 500 ~ 1060hpa.

Storage Condition Temperature -10°C ~ 55°C, Humidity 10 ~ 95%, Atmospheric pressure 700 ~ 1060hpa.

humidity, and +40°C ~ +50°C and 30%.



2.4. Safety Precaution

This equipment was developed and inspected according to domestic and international safety standards. It guarantees a high safety grade for this equipment. Manufacturer is legally bound to provide users with a sufficient explanation on safety concerns of the equipment. Precise operation is necessary for safe operation. Thus, please read all instructions safely before operating the equipment. For more specific information, please inquire with our customer service department or authorized dealers.

1. This equipment shall not be used in places with danger of explosion or near flammable, explosive and/or volatile chemical substances such as alcohol and benzene.
2. Do not store or operate the equipment in humid places. Humidity shall be maintained at 30% ~ 90% during normal operation. Do not place the equipment in places where water can splash, drop or sprinkled. Do not place an object containing liquid or gas ab

ove the equipment.

3. This equipment shall be operated by or under supervision of a well-trained and capable person.
4. Repair of this equipment shall be handled by service personnel at US Ophthalmic LLC or a person with equivalent certification.
5. Customer's care over this equipment shall be done only according to the User Manual

11. Do not apply excessive pressure on cable connection. If the cable does not connect, check to see if the plug is appropriate for socket. Damaged cable plug and socket shall be repaired by certified service technician.
12. Do not pull the cable. Always hold and pull plug when removing the cable.
13. This equipment can be used as other international purposes for general examination of lenses in accordance with this instruction.
14. Always conduct a visual examination of the equipment and inspection for proper functioning before operation.
15. Immediately turn off the power and remove plug when smoke, flame, unusual noise or smell is detected from the equipment.
16. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to other devices, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - A. Reorient or relocate the receiving device
 - B. Increase the separation between the equipment
 - C. Connect the equipment into an outlet on a circuit different from that to which the other

3

Feature

1. Quick and convenient measurement of refraction and center of a lens.
2. Wide range of measurement from $-25D$ to $+25D, 0 \sim 20\Delta$
3. More precise measurement with unit as small as $0.01D$.
4. Quick and convenient measurement of progressive multifocal lens and general multifocal lenses.
5. Various and splendid screen through color LCD.
6. Observation of ultraviolet rays passing rate in specific band.
7. Observation of blue light passing rate in specific band.

4

Instructions for Use

1. Do not hit or drop the equipment. Strong pressure might damage the equipment. Strong pressure can affect the function of the equipment. Thus, always handle with care.
2. Install the equipment in a stable place without vibration to maintain normal condition.
3. Direct sunlight or bright lighting can affect measurement results.
4. Consult with dealers before connecting this equipment to other gears.
5. Rapid heating in a cold place will cause water vapor condensation on optical parts and lenses inside the equipment. In such cases, wait for condensed water vapor to disappear.
6. Always keep the equipment clean for precise results. Dust can cause an equipment failure. Always turn off the power and cover with dust cover after use.
7. Do not use organic matters such as thinner or benzene to wipe the equipment as they can affect the equipment. Use clean cloth or towel.
8. Use of improper battery might lead to an explosion. Always use batteries of proper standard.

5

Device Configuration and Operation Flow

5.1. Device Configuration - Main Parts

1. LCD Screen

: Display the lens measurement screen.

2. Power Switch

: Switch for power on, off.

3. Marking Lever

: Used to mark a lens by pushing the lever down.

4. Lens Table Lever

: Moves the lens table forward and backward.

5. Lens Table

: Touched to the bottom of the lens frames. (To display an uncut lens diameter, place the lens so that its edge comes into contact with the lens table)



6. Lens Cap

: A lens to be measured is placed on the lens cap. This is the base point for measurements.

7. LED Lamp

: Indicates On, Off or blinking of the power to the device.

- LED ON (Power turned on)
- LED OFF (Power turned off)
- LED Blinking (Screen save mode on)

8. MEM Button (Save Button)

: Used to read measured data.

This button locks in the measurement data on the screen to be saved in the memory.

This button locks in the measurement data on the screen to be saved in the memory.

9. PD Sensor

: Used to measure PD value.

10. Lens Holder Lever

: Used to operate the lens holder.

- To secure a lens: Lift once and lower gently.
- To release a lens: Lift until it clicks.

11. Printer

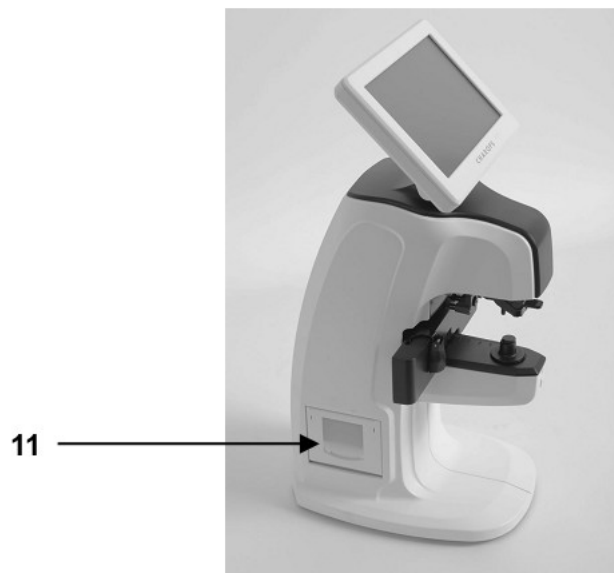
: Opened by sliding the lever at the side of the device to replace the printer paper.

12. RS-232 Connector

: A terminal connecting to the exterior equipment

13. Power Connector

: Used to connect a removal power cord.



[Names of parts (III) – Side]

5.2. Device Configuration – Standard Accessories

1. Printing Paper: Rolled paper for printing
2. Adaptor – DC 12V/3A

2. Adapter - DC 12V/0.5A
3. Power Cable (180cm)
4. Blower: A blower for removing dust on a pinhole
5. Dust Preventive Cap: a cap to prevent dust from entering : (1)
6. Contact lens tweezer: a tool to pick up contact lenses
7. User Manual: Operation guide for users
8. Dust Cover: a plastic cover to prevent dust from entering
9. Inspection Certificate: Quality inspection certificate
10. Ink : Ink for marker (Optional)
11. Ink Cartridge : For marker (Optional)
12. Contact lens support

5.3. Operation Flow

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Measurement (Print)	7. Button Composition 8. Screen Composition 8.1. Measurement Screen 8.2. Progressive lens Screen 8.3. Auto Detect Mode 8.4. Contact lens Screen 8.5. UV Lens Screen 8.6. Setup Screen 9. Measurement 9.1. General lens 9.2. Eyeglass lens 9.3. Progressive Multifocal lens 9.4. General Multifocal lens 9.5. Contact lens 9.6. UV Transmission 9.10. Print Format	Page.24 Page.26 Page.26 Page.28 Page.29 Page.30 Page.31 Page.32 Page.44 Page.44 Page.47 Page.49 Page.60 Page.62 Page.64 Page.67
	▼	

6

Equipment Installation and Preparation

6.1. Parts Inspection

1. Inspect supplementary articles.
Open the box and make sure all articles are there (dust cover, User Manual and etc.).
2. Remove protection tapes.
Remove protection tapes on lens holder, lens cap, marking lever.

6.2. Start-up Test

1. Connect power cable.
Connect the cable to the power consent on the bottom parts of equipment to provide power.
2. Inspect initial state.
Make sure the equipment operates properly after turning on the power switch. While the equipment is starting up, check if there are any objects placed on the lens cap. If a problem



[Screen showing an initialize error (2)]

- a. Turn on the equipment, and make sure there are not any objects on the lens cap.

- a. Turn on the equipment, and make sure there are not any objects on the lens cap.
- b. If a message that says, “Initialize error” is displayed as shown in [Picture: Screen showing an initialize error (1)], check to see there are any objects placed on the lens cap or pinhole, and remove if there is any. Press “OK” button and enter to measurement screen. If the problem continues, inquire with authorized seller or manufacturer.

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Button Composition

7.1. Button Composition According to Measuring Mode

- General Lens Measurement Screen Buttons



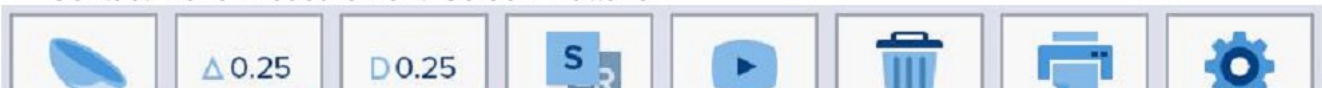
- Progressive Lens Measurement Screen Buttons



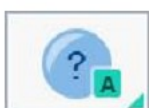
- Auto Detect Mode (General/ Progressive Lens) Screen Buttons



- Contact Lens Measurement Screen Buttons



Screen to measure progressive multifocal lens



Auto Detect Mode

Determine the type of lens (general or progressive) currently being measured, and then convert to progressive lens measurement screen automatically if the lens is a progressive lens.



Contact Lens

Screen to measure contact lens



UV Lens

Screen to measure UV lens



Change the mode

(Popup) Change screen to general lens measurement mode, progressive lens measurement mode, auto detect mode, contact lens measurement mode, UV lens measurement mode. Use



TRNS

Reverse signs on cylinder value



CLEAR

Initialize data



PRINT

In case of option print on, print out and transmit the current (stored) data and delete data information.



QR Code

When you turn off the printing function or do not have the printing function, click this button to display QR Code, Scan to see the measurement results.



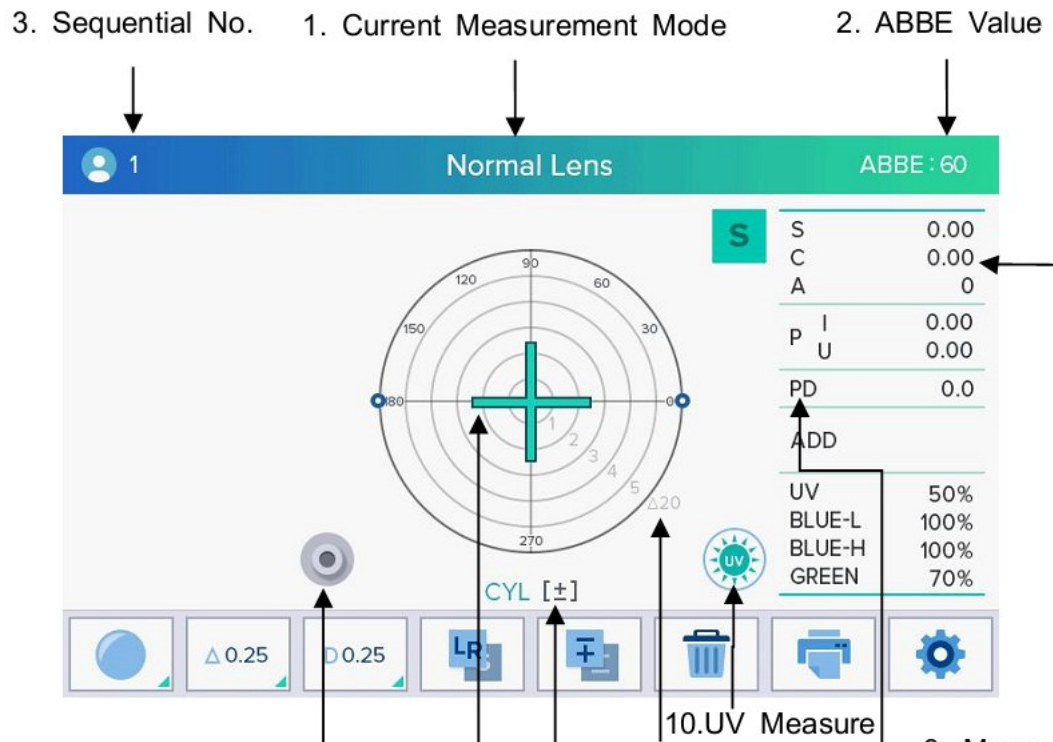
START / STOP

Start/stop measuring current data on contact lens measurement screen and save the average

8

Screen Composition

8.1. Measurement Screen



3. Sequential Number



Show the sequential No. for the customer identity.

4. Measurement Status

A drawing of lens cap without a lens indicates that no lens has been placed for measurement, and a drawing of lens cap with a lens indicates that a lens has been placed for measurement.

5. Measurement Position

The position currently being measured is marked with a cross mark.

-  (Orange color): Center is aligned within 0.6 prisms.
-  (Bluish green color): Center is precisely aligned, and measuring point can be marked after angle adjustment.

- **+** (Purple color): Indicates a place being measured.

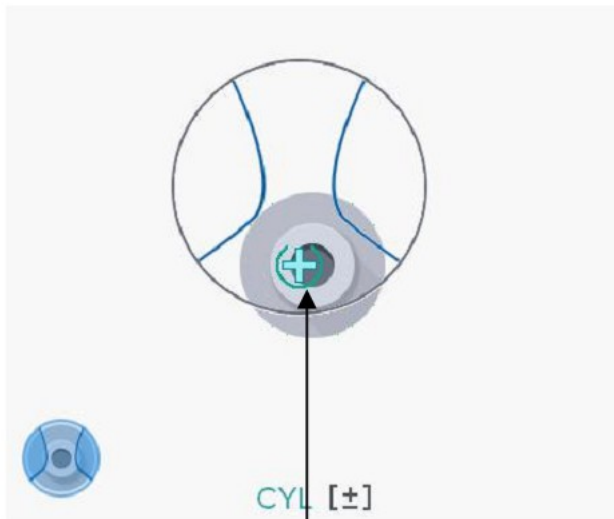
6. Prism Display

Display the prism zone on screen.

7. Cylinder Sign

Current cylinder sign is marked as \pm , + or - .

8.2. Progressive Lens Screen



1. Distance Viewing Zone
Measurement Position



2. Distance Viewing Zone
Measurement Position

[Progressive lens screen composition]

8.2.1. Specifics

8.3. Auto Detect Mode Screen





[Auto detect mode screen composition]

8.3.1. Specifics

Automatically determine the type of lens (general or progressive) currently being measured, an

8.4. Contact Lens Screen



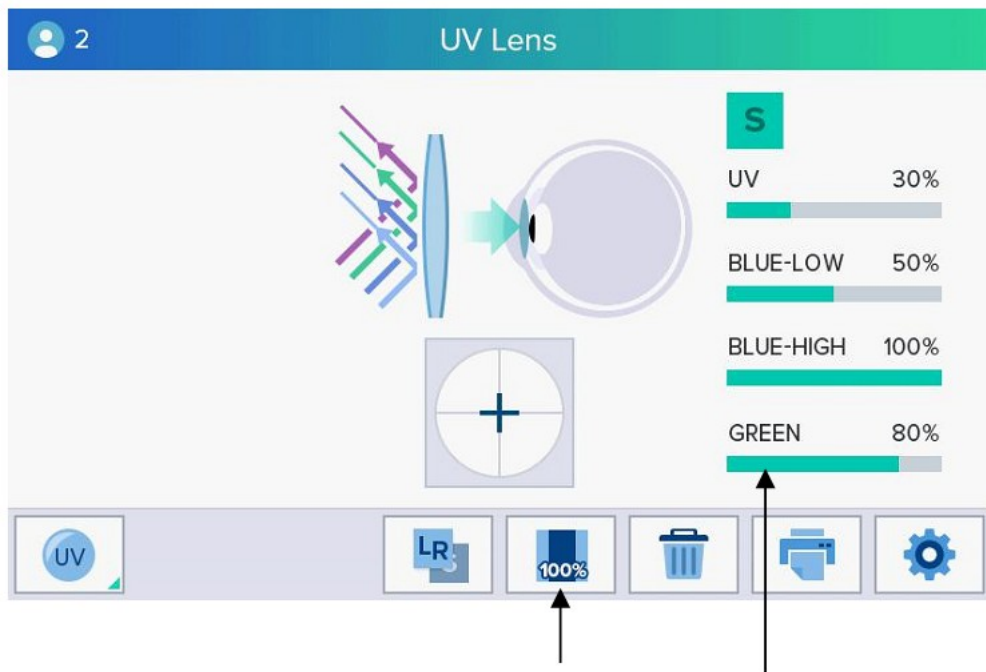
1. Start/Finish Saving

2. Reliability Graph

[Contact lens screen composition]

8.4.1. Specifics

8.5. UV Lens Screen



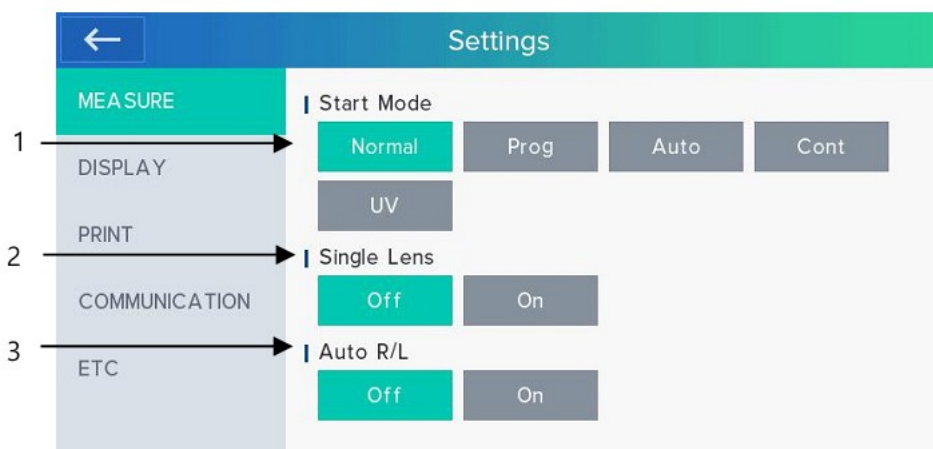
1. Transmission Status 100%
2. UV Transmission

[UV lens screen composition]

8.5.1. Specifics

8.6. Setup Screen

8.6.1. Specifics



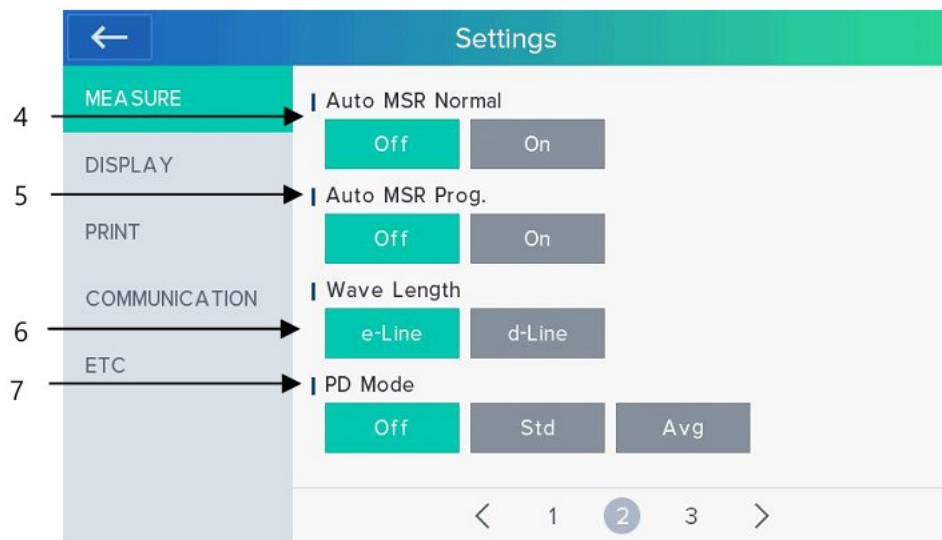


[Settings screen composition – Measure (1/3 page)]

1. START MODE

Select the initial measurement mode.

- Norm: Select the initial measurement mode to normal lens measurement mode



[Settings screen composition – Measure (2/3 page)]

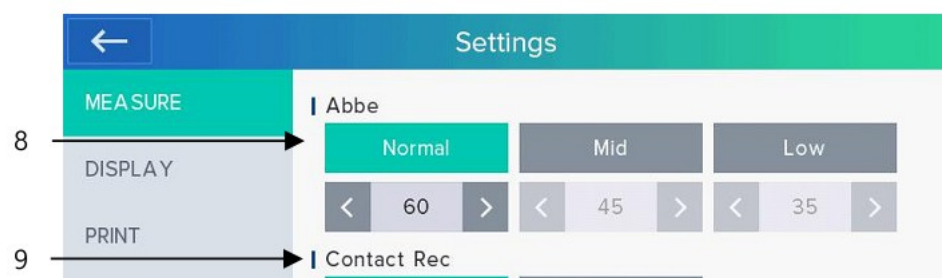
4. AUTO MSR NORMAL

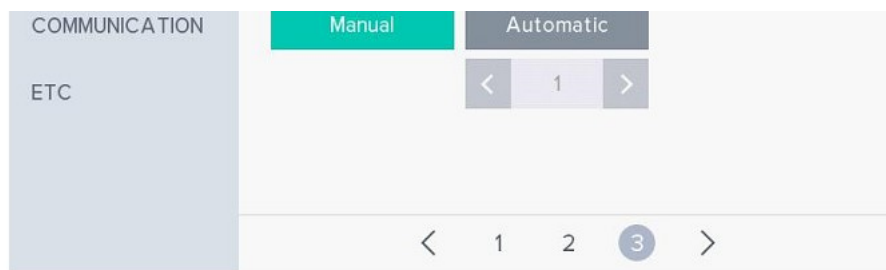
Choose to enable a function to automatically save lens data when the center of the lens is aligned on normal lens measurement mode.

- Off: Disable the function.
- On: Enable the function.

5. AUTO MSR PROG

Choose to enable a function to automatically save lens data when the center of the lens is





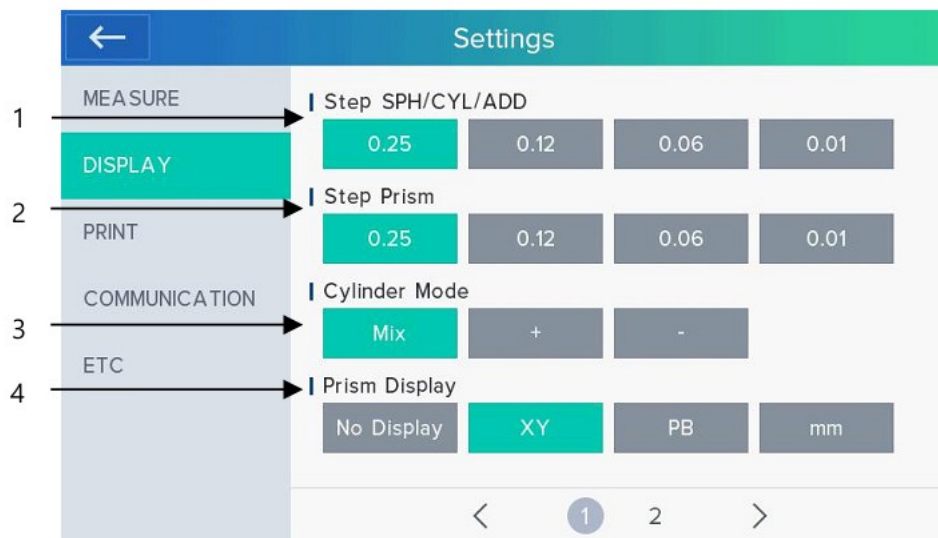
[Settings screen composition – Measure (3/3 page)]

8. ABBE

Set Abbe constant value.

- Normal: Mark ABBE constant Normal. (=50~60)
- Mid: Mark ABBE constant Mid. (=40~49)
- Low: Mark ABBE constant Low. (=30~39)

9. CONTACT REC



[Settings screen composition – Display (1/2 page)]

1. STEP SPH/CYL/ADD

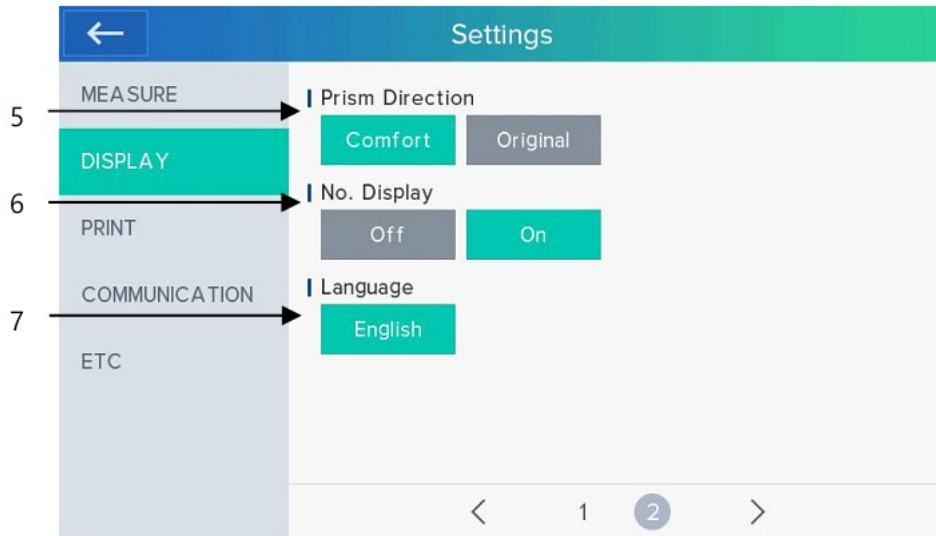
Set SPH, CYL and ADD value indication units.

- 0.25: Set SPH, CYL and ADD value indication unit to 0.25.
- 0.12: Set SPH, CYL and ADD value indication unit to 0.12.
- 0.06: Set SPH, CYL and ADD indication unit to 0.06.
- 0.01: Set SPH, CYL and ADD indication unit to 0.01.

2. STEP PRISM

Set Prism value indication unit.

- 0.25: Set prism value indication unit to 0.25.
- 0.12: Set prism value indication unit to 0.12.



[Settings screen composition – Display (2/2 page)]

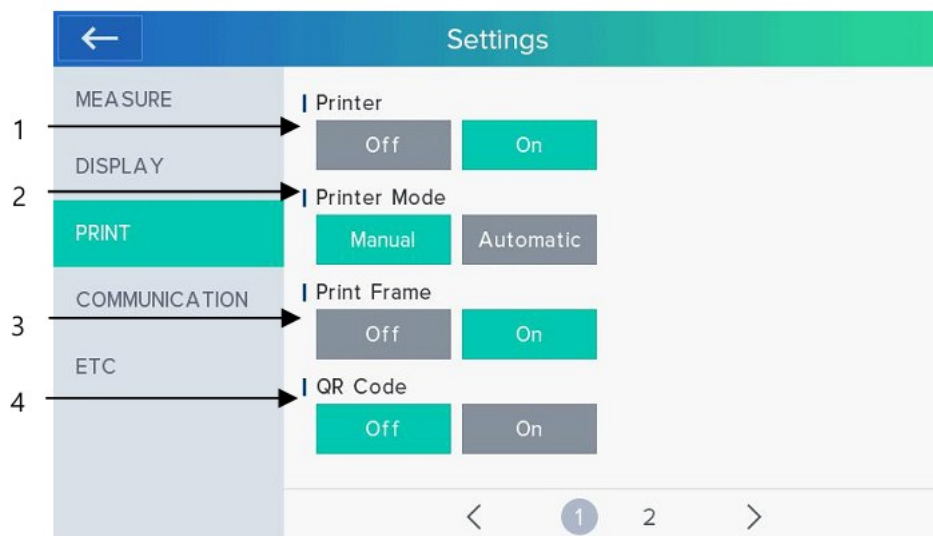
5. PRISM DIRECTION

Set direction of cross mark movement on measurement screen.

- Comfort (Comfortable): Set cross mark to move in the direction of lens movement for user convenience. (Prism Display: Prism angle and cross mark position on screen might not accord during PB setting.)
- Original: Set cross mark to move in the basic prism direction.

6. NO. DISPLAY

Choose whether to display customer's serial number on screen



[Settings screen composition – Print (1/2 page)]

1. PRINT

Set whether to use printing function.

- Off: Disable the function.
- On: Enable the function.

Note:When you disable the function,QR Ccode function will turn on automatically.

2. PRINTER MODE

Choose to use a function to print automatically after measurement.

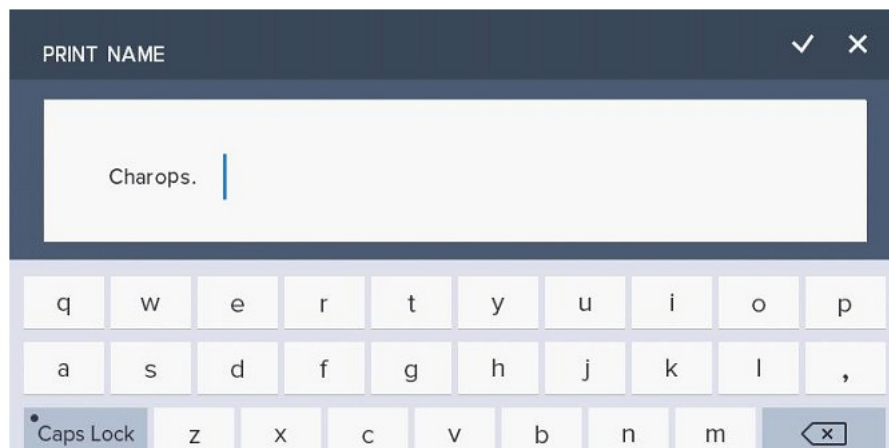
- Automatic : Results will be printed automatically after measuring right and left lenses and



[Setting screen composition – Print (2/2 page)]

5. NAME

Enter name to print out. (Refer to Picture Name)

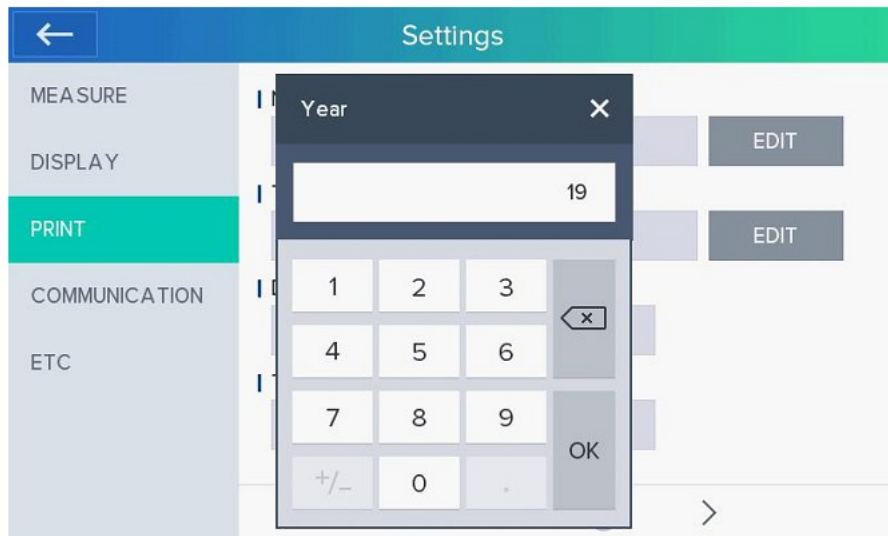


7. Date

Enter date to print out. (Refer to Picture)

8. Time

Enter date to print out. (Refer to Picture)



[Setting screen composition – Date / Time]

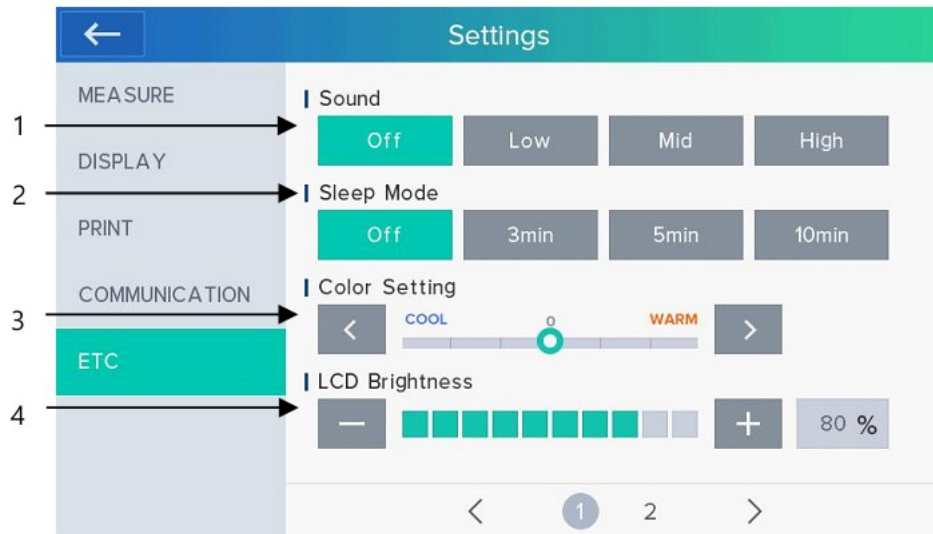


[Settings screen composition – Communication]

1. BPS

Set communication speed with outside.

- 9600: Set communication speed to 9600.
- 57600: Set communication speed to 57600.
- 115200: Set communication speed to 115200.



[Settings screen composition – ETC (1/2 page)]

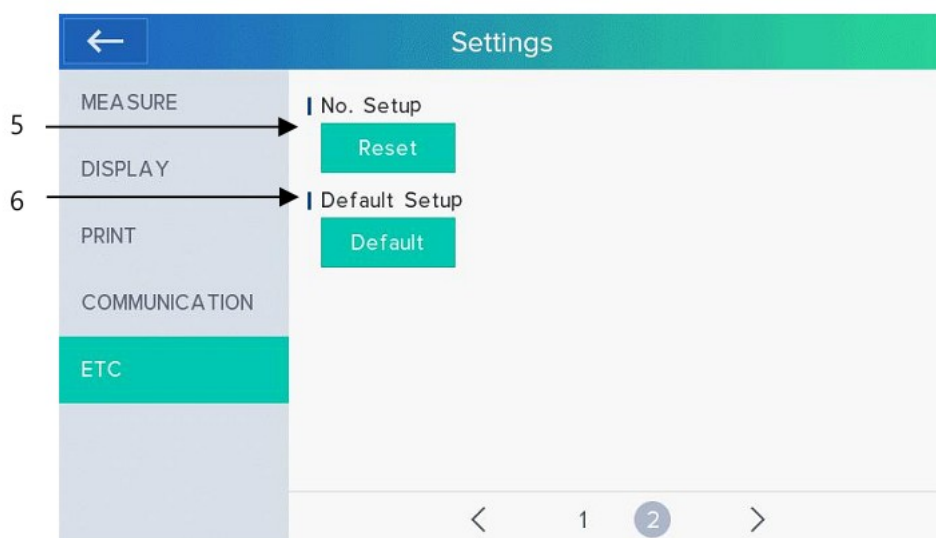
1. SOUND

Enable/disable sound function and adjust volume.

- Off: Disable sound.
- Low: Enable sound and set volume to low.
- Mid: Enable sound and set volume to medium.
- High: Enable sound and set volume to high.

2. SLEEP MODE

Enable/disable screen saver function



[Settings screen composition – ETC (2/2 page)]

5. NO. SETUP

Reset customer serial number to 1.

- Reset: Do you want to reset patient number?

(Refer to Picture No. Setup)

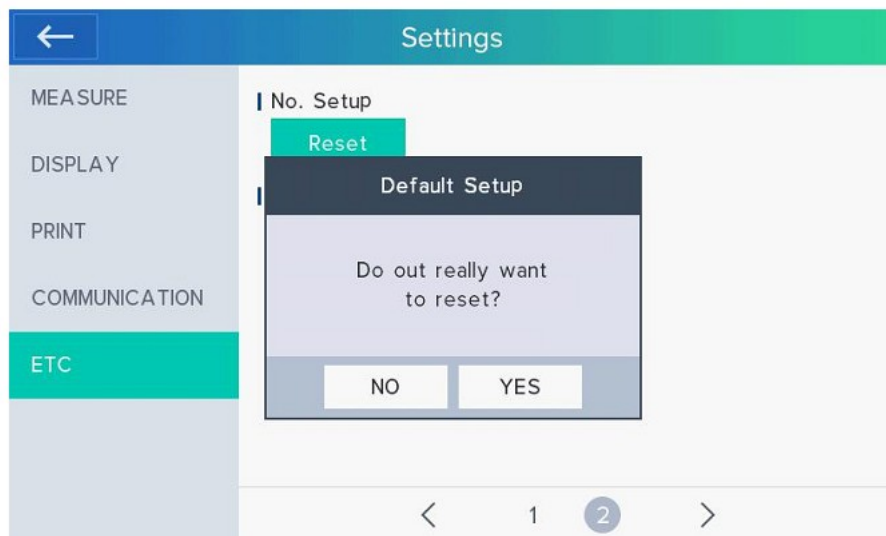


6. DEFAULT SETUP

Initialize the user setup data to default value.

- Reset: Do you really want to reset?

(Refer to Picture Default Setup)



[Settings screen composition – Default Setup]

9.1. General Lens



[How to measure a general lens]



INFORMATION

There is no need to adjust astigmatism angle to 180° when the lens is without astigmatism power or when there is no need to mark astigmatism focus and cylinder axis.



OFF center



ALIGNMENT OK





INFORMATION

The drawings below will be displayed on the bottom left corner of the screen according to presence of a lens.



No lens has been placed

A lens has been placed

[Measurement status display]




INFORMATION

A drawing of the lens cap without a lens will be displayed on the bottom left corner of the screen when a lens is not placed. If a drawing of the lens cap with a lens is displ

9.2. Eyeglass Lens





[Eyeglass lens measurement]


1. Press 'S→R' button () to enter eyeglass lens measurement environment. 'L' and 'R' will be displayed on the top of the screen.


 **CAUTION**

 **CAUTION**

Left/right lens will be automatically determined if PD function is enabled according to the positioning of PD sensor. This lens determining function is prioritized before the lens selection function using 'S→R' button () , and the selection made using 'S→R' button () will be ignored.

 **CAUTION**

When PD function is unavailable or disabled, or when side allocation function is manually, press 'S→R' button () to select a lens to measure.

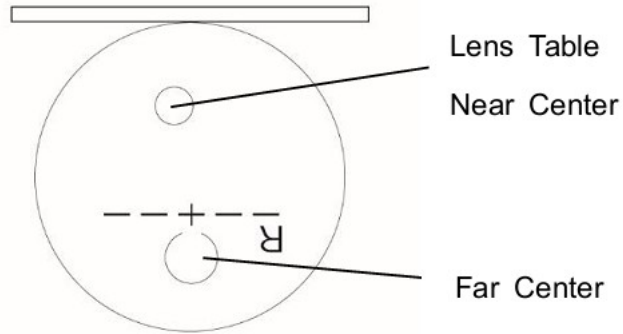
6. Adjust focus until green "十" is displayed. After PD function is on, place the PD position sensor on the center of the eyeglass frame.
7. Press 'MEM' button to save the measurement, and press 'PRINT' button () to print out the measurement.

 **INFORMATION**

When PD value is not wanted, lens table can be used as horizontal support without using the PD position sensor. In this case, PD position sensor must be pulled over entire

9.3. Progressive Multifocal Lens

9.3.1. Structure of Progressive Multifocal Lens



[Structure of single progressive lens]



INFORMATION

Horizontal line of a lens shall be placed parallel to the lens table.



INFORMATION

Sizes of progressive multifocal lenses vary according to manufacturers.



INFORMATION

Some of the old type progressive lenses do not comply with 2~3mm standard toward the frame center.



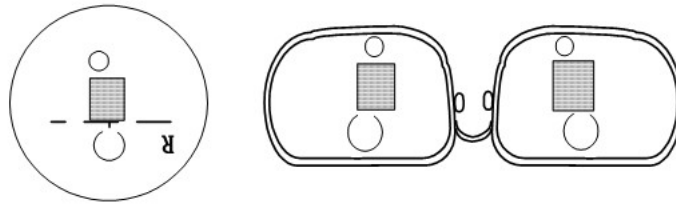
INFORMATION

Do not pick up the lens during measurement. Fixating angle of lens holder must be maintained. During measurement, lens shall be moved left-right or forward-backward. Picking up the lens might result in incorrect measurement.



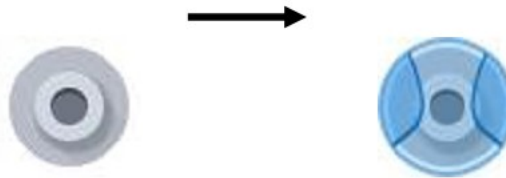
INFORMATION

If lensmeter is operated with sensitive measuring when put on the progressive lens using auto measurement,



[Progressive band for autonomous judgment]

- The icon on the bottom left of the screen will change as the below ('no lens' → 'progressive lens').
Then, the screen will automatically convert to progressive lens measurement screen.



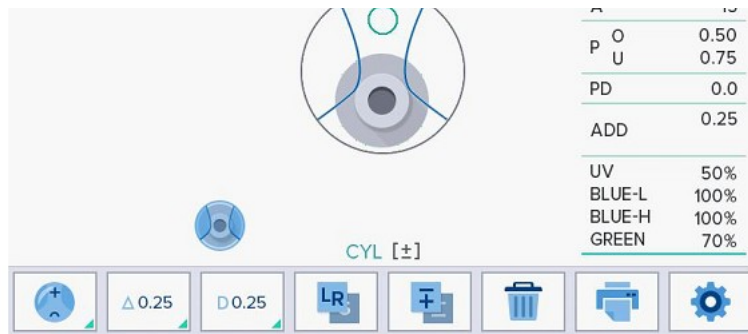
[Change of status icon]

! INFORMATION



- Adjust the lens left-right or upward-downward so the cross mark is located on the distance viewing zone target center.





Distance viewing zone center will be auto saved when the cross mark reaches the distance



9.3.4. Near Viewing Zone Measurement

1. Move the lens to near viewing zone. For an eyeglass lens with erased marker, push until the leg on the lens holder reaches the bottom frame of the eyeglass.



INFORMATION

For an eyeglass lens, it is advisable to pull the lens using the lens table while maintaining parallel to the lens table.

INFORMATION

INFORMATION

(Case 1) For eyeglass lens with small frame, pull up the lens holder and pull a little more to find the near viewing zone center since the near viewing zone center is nearby the bottom frame. ([Picture : Small eyeglass lens])



INFORMATION

(Case 2) For eyeglass glass lens with very small frames, near viewing zone center is cut off sometimes. For such cases, press 'MEM' button at the point where the horizontal indicator is minimized while abiding in the horizontal allowance to set a near viewing zone center forcibly. ([Picture: Small eyeglass lens])

Case 1

Case 2



[Small eyeglass lens]



INFORMATION

Cause 1	A general lens with intense aberration can be misjudged as a progressive lens.
Countermeasure	Measured in the general lens mode.

3. When it is difficult to find distance viewing zone.

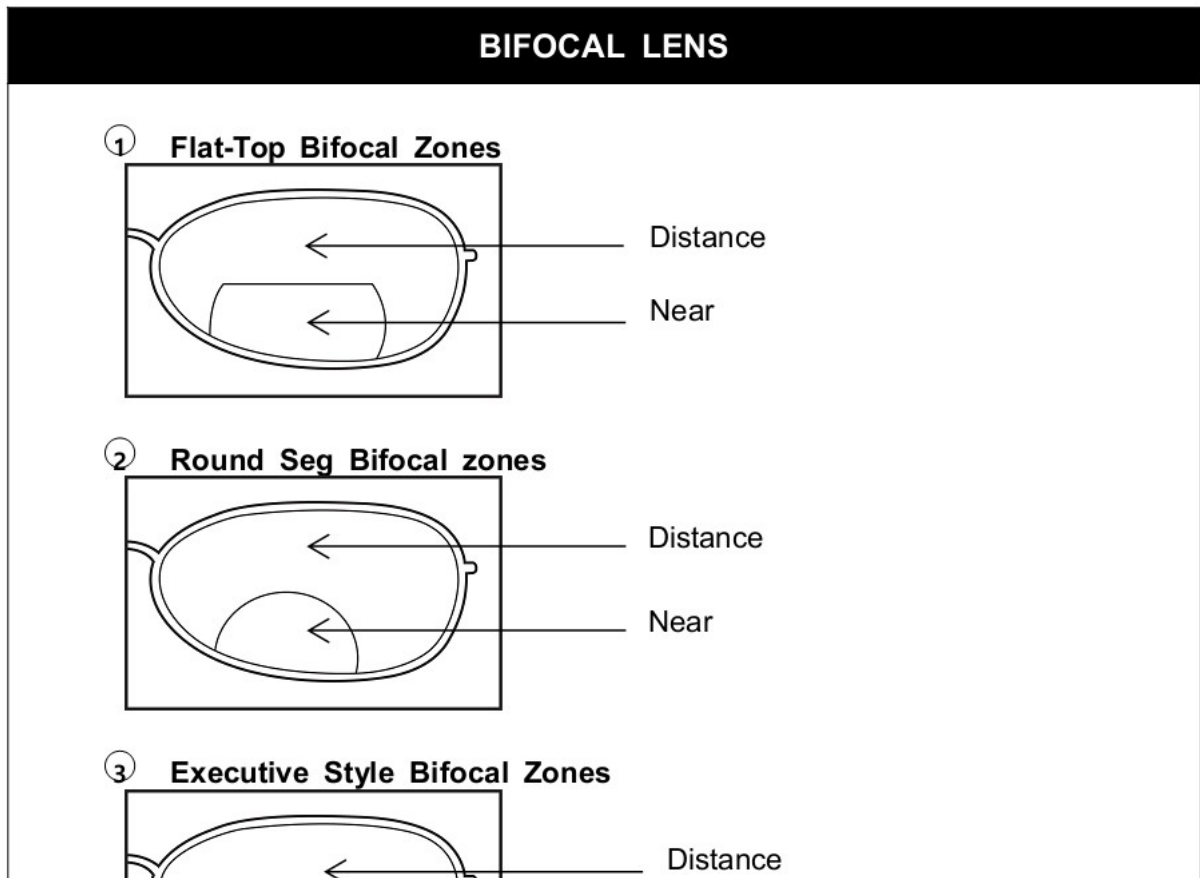
Cause 1	If progressive area is expanded into distance viewing zone, it is difficult to find the distance viewing zone.
Countermeasure	Place the cross mark as close as to distance viewing zone target center, and press 'MEM' button.
Cause 2	If distance viewing zone is near the upper frame, it is difficult to find.
Countermeasure	Pull up the lens holder, and find the distance viewing zone center while pulling the frame.

4. When it is difficult to find near viewing zone.

Cause 1	If near viewing zone is located near the bottom frame, it is difficult to find.
Countermeasure	Pull up the lens holder, and find the near viewing zone center while pulling the frame.
Cause 2	If the progressive area continues after the near viewing zone center, it is difficult to find.

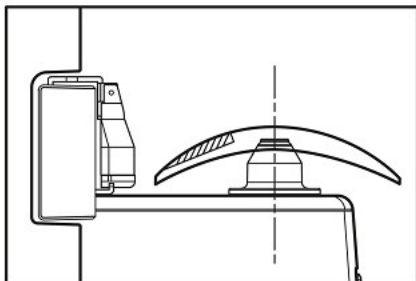
9.4. General Multifocal Lens (Bifocal Lens / Trifocal Lens)

9.4.1. Structure of General Multifocal Lens



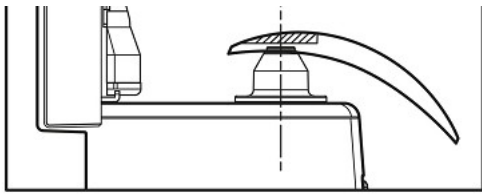
9.4.2. Measurement on General Screen

1. Place a lens on the first focal center, and press 'MEM' button.



2. Place a lens on the second focal center, and press 'MEM' button. First 'ADD' value will be displayed on screen.





3. This ADD value is not a fixed value. Thus, if you are confident that this value is a true value, press 'MEM' button again.
4. If you wish to set second ADD value, press 'MEM' button.

3. Move the lens to the second focal center, and progressive value will be measured automatically.

INFORMATION

If auto-measurement does not work on each stage, or if you want to measure manually, press 'MEM' button to progress to the next step.

9.5. Contact Lens

Press Measurement Mode button () and select Contact Lens Measurement Mode () button.

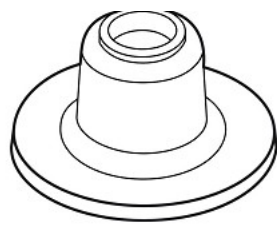
9.5.1. Measurement

1. Replace the lens support for Contact lenses.

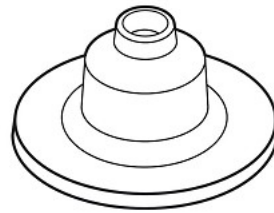


INFORMATION

- There are two types of lens supports as shown below. Use it according to the purpose.
- Normal Lens support and Contact lens support can be divided into the hole size on top.



<For Normal Lens>



<For Contact Lens>

2. Remove moisture of contact lens using a clean lens towel.
In the case of Soft Contact Lens, It can be torn easily. So, remove moisture with touches lightly.
3. Place the lens on the Contact Lens Support. The convex surface shall face the top.
4. Adjust so the cross mark on the screen is located on the center of the concentric circle.
Push or Pull the end of Contact lens lightly with tweezers or hands.



INFORMATION

9.6. UV Transmission



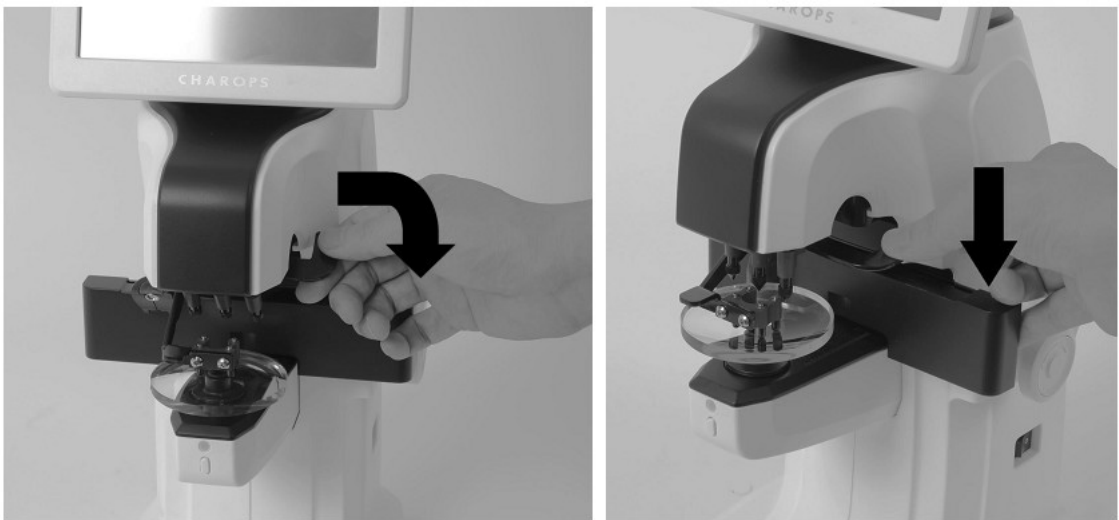
[How to measure UV transmission]

1. Press Measurement Mode button () and select 'UV' lens measurement mode ()
().
2. Pull out the UV cover.

9.7. Measuring Point Marking

9.7.1. Without Astigmatism

1. Place a lens on the lens cap, and move the lens until green “+” is displayed.
2. Tilt the marking lever to reach 90° to horizontal.
3. Pull down the marking lever to mark.



[How to mark a measuring point]

HUVITZ
SHANGHAI

9.9. Measurement Data Transmission using Serial

The measured data can be transmitted externally via the serial communication and can be transmitted to CDR (phoropter) and PC using CDR-Mate (PC Program).

You can use the transferred data on PC side using CDR-Mate (optional).

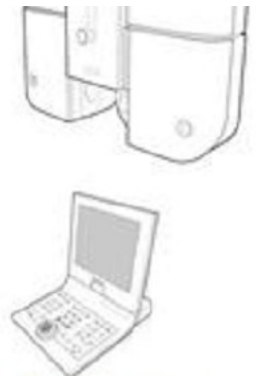
9.9.1. Connection

1. CLM → Connection using RS232 serial cable → CDR (phoropter)
2. CLM → Connection using RS232 serial cable (CLM) and USB gender (PC) → CDR (phoropter)



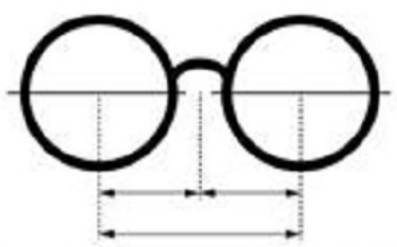


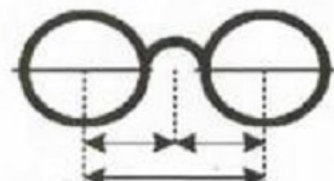

LM Measurement Data →



9.10. Print Format

Print format is as the below.

1. NAME :
2. NO. 00000
3. DATE : 2014/09/26 13:10
4. LENS : NORMAL
5. 
6. RPD : 0.00 LPD : 0.00
PD : 0.00
7. <RIGHT> <LEFT>
SPH: 0.00 SPH: 0.00
CYL: 0.00 CYL: 0.00
AXS: 0 AXS: 0
PSM:I 0.00 PSM:I 0.00
U 0.00 U 0.00
8. =====
CLM-1
Charops.

1. NAME :
2. NO.00003
3. DATE:2019/12/20 09:43
4. LENS:NORMAL
5. 
6. R-PD: 0.00 L-PD: 0.00
PD: 0.00
7. <RIGHT> <LEFT>
SPH : 0.00 SPH : 0.00
CYL : 0.00 CYL : 0.00
AXS : 0° AXS : 0°
PSM : I 0.00 PSM : I 0.00
U 0.00 U 0.00
8. =====
CLM-1
Charops.
+86-21-3630-7061
9. 
- 10.

10

Self-diagnosis and maintenance/repair

10.1. Before calling a serviceman

Warning appears on the screen when there is a problem or when this device malfunctions. Take the following measures in case of the following.
 Contact a sales distributor after turning off the power when the device does not resume normal operation even after taking the following measures.

1. When power switch is turned on

Message	Root causes	Measures
Initialize error	Check to see there are any objects placed on the lens cap or pinhole.	Check to see there are any objects placed on the lens cap or pinhole, and remove if there is any. Press "OK" button and enter to measurement screen. If the problem continues, inquire with authorized seller or manufacturer
Please remove the lens	Check the lens on the lens cap.	Remove the lens from the lens cap, and press "OK" button to enter to measurement screen.

10.2. Printing Paper Replacement

1. Pull the cover on the side to open the printer cover.



2. Cut off the paper clamped in the paper, and take out the paper roll.



4. Fixate the paper in the printer. Adjust the length so the paper is mounted between the paper outlets.



5. Place the end of the paper through the hole on the cover and close the cover.



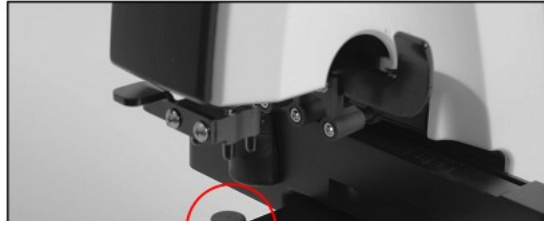
10.3. Storage

While not use, cover up the device with the dust cover as shown in [Picture: How to store while not use] for storage.



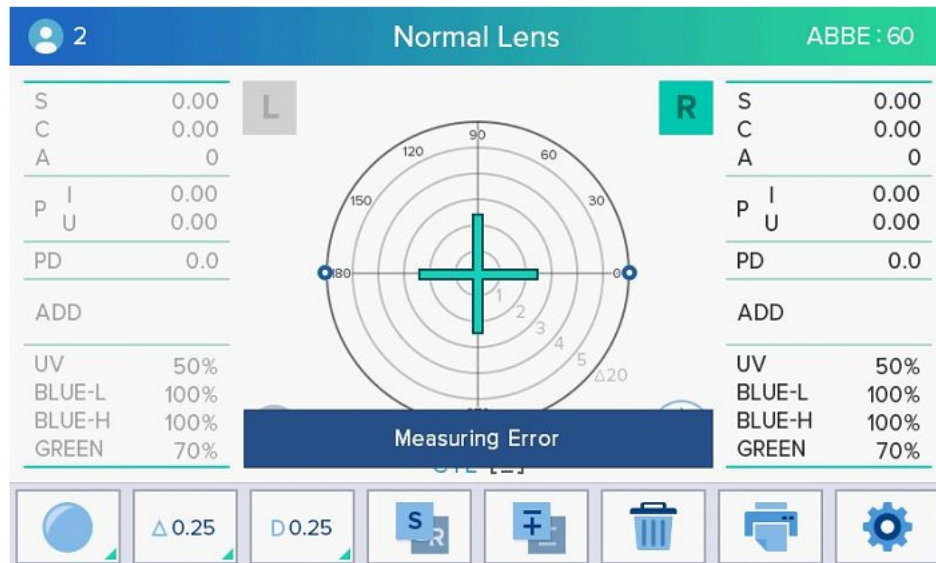
[How to store while not use]

If you do not plan to use the device for more than a week, place the dust cap on lens cap as shown in [Picture: For long-term storage].



10.5. Various Messages

Message box shows information when you are measuring or this instrument is out of order.



[Measuring Error screen]

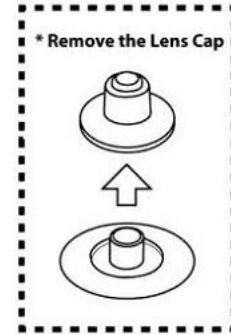
Measuring Error:

- Is displayed when there is no signal.
- Is displayed when there is out of range signal.

10.6. How to Clean Pinhole

If the S, C and A values are not 0 when the equipment starts up, clean the pinhole. Remove the lens cap and wipe using a clean lens towel as shown in [Picture: How to clean the pinhole]. Do not use liquid such as alcohol or acetone.





[How to clean the pinhole]

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Major Specification

- **Measurement Range**

Spherical Power	0D ~ ±25D (0.25/0.12/0.06/0.01)
Cylinder Power	0D ~ ±10.00D (0.25/0.12/0.06/0.01)
Cylinder Axis	0° ~ 180° (1° step)
Progressive Power	0 ~ 10D (0.25/0.12/0.06/0.01)
Prism	0 ~ 20Δ (0.25/0.12/0.06/0.01)

- **Measurement Mode**

Cylinder	±, +, -
Prism	Rectangular / Pole / Displacement
LED wave	545 nm (Green)
Contact Lens	Hard / Soft Contact Lens
Abbe value	Manual Revision
Wave	e-Line, d-Line
Screen	7"Color LCD Panel (800*480)

EMC Information

Manufacturer announcement – electromagnetic waves trouble

- **Electromagnetic waves trouble**

LM-7800 should be used in the below mentioned electromagnetic wave environment. LM-7800 purchaser or user needs to confirm whether LM-7800 is used in this type of environment.

Trouble test	Question of appropriateness
RF emissions CISPR 11	Group 1
RF emissions CISPR 11	Class B
Harmonic emissions IEC 61000-3-2	Class A
Voltage fluctuations/flicker IEC 61000-3-3	Complies

Manufacturer announcement – electromagnetic waves tolerance

Voltage dip, instantaneous interruption, voltage fluctuation at the power input line IEC 61000 - 4 - 11	For 0.5 cycle < 5 % <i>UT</i> (<i>UT</i> 's > 95 % decrease) For 5 cycle 40 % <i>UT</i> (<i>UT</i> 's 60 % decrease) For 25 cycle 70 % <i>UT</i> (<i>UT</i> 's 30 % decrease) For 5 seconds < 5 % <i>UT</i> (<i>UT</i> 's > 95 % decrease)	For 0.5 cycle < 5 % <i>UT</i> (<i>UT</i> 's > 95 % decrease) For 5 cycle, 40 % <i>UT</i> (<i>UT</i> 's 60 % decrease) For 25 cycle, 70 % <i>UT</i> (<i>UT</i> 's 30 % decrease) For 5 seconds, < 5 % <i>UT</i> (<i>UT</i> 's > 95 % decrease)
Power frequency magnetic field (50/60 Hz) IEC 61000 - 4 - 8	30 A/m	30 A/m
Other <i>UT</i> is the a.c. power voltage for before approving the test level.		

- **Electromagnetic waves tolerance**

LM-7800 is to be used in the below mentioned electromagnetic wave environment. LM-7800 purchaser or user needs to confirm whether LM-7800 is used at this environment.

Tolerance test	IEC 60601 test conditions	Appropriateness level
Conductivity RF electromagnetic field IEC 61000 - 4 - 6	3 Vrms 150 kHz~80 MHz	3 Vrms

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Service Information

Service Instruction: If a problem occurs on the equipment, follow the below instruction.

- First, follow the instruction in Chapter 10 Self-diagnosis and maintenance/repair according to a type of the problem.
- If the problem continues, contact the place of purchase.
- Before contacting the place of purchase, it is advisable to prepare information of the equipment such as model number and serial number. Thus, write down the information on the table below immediately after making a purchase so you can always have access to the information. Serial number can be found on the back of the equipment. Each product comes with a serial number of its own. Please keep this instruction booklet as a record of purchase. Please keep the receipt as a proof of purchase as well. **Date**

of Purchase: _____

Name of Seller: _____

Seller Address: _____

Seller Phone: _____

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Model distinction

Function	Description	LM-7800
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SPH	-25D ~ +25D (0.25/0.12/0.06/0.01)	○
PRISM	0 ~ 20Δ (0.25/0.12/0.06/0.01)	○
CYL	0D~±10.00D (0.25/0.12/0.06/0.01)	○
AXIS	0° ~ 180° (1° 步长)	○
ADD	0 ~ 10D (0.25/0.12/0.06/0.01)	○
Progressive lenses	Progressive lens measurement	○
Contact lens	Contact lens measurement	○
PD	PD measurement	○
UV	UV measurement	○
Blue	Blue measurement	○
Printer	Print measurement results	○
QR Code	Scan QR code to display measurement results	○
RS-232C	Communication with other company or HUVITZ equipment	○