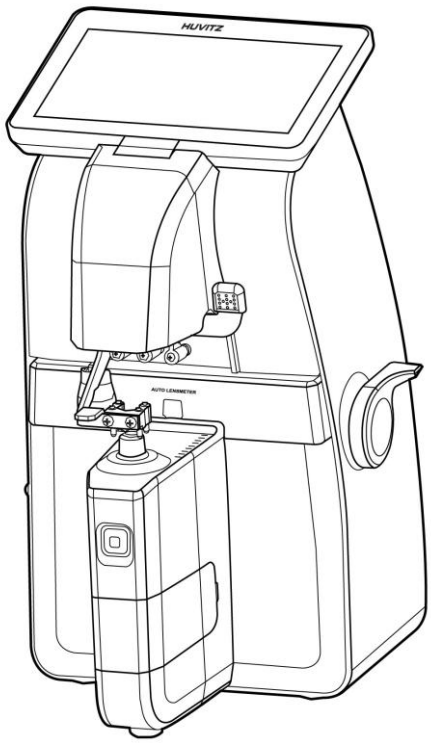
ENG

Huvitz

Auto-Lensmeter

HLM-9000

USER 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, Huvitz will not be held responsible for any potential errors or omissions caused from the use of information in this User Manual.

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

CE

9000ENG0024-K
(2023.07.01)

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1

Introduction

1.1. Intended use

An Auto Lensmeter HLM-9000 is intended for measuring the refractive power of lenses and gives the spherical, cylindrical and axis of the lenses

1.2. Classifications

- Classification: Class I according to Annex VIII (Rule 13) of the Medical Device Regulation 2017/745(MDR)
- 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 anesthetics mixture with air or with oxygen or with nitrous oxide: Not suitable for use in the presence of a flammable anesthetics mixture with air or with oxygen or with nitrous oxide.
- Mode of Operation: Continuous

1.3. Basic principles of measurement

- Wave front Analysis Technology with the Hartmann Sensor
- Measurement light (Green, 545nm) illuminates the lens under measurement for lens refraction measurements. It is mapped to the image sensor through the pinholes. Depending on the size and position of the image, the processor calculates the optical parameters of the lens. These measurements relate to the current measurement position located and it is used to center the measuring object and display the measured value.

1.4. Applied Standard

- IEC/EN 60601-1: MEDICAL ELECTRICAL EQUIPMENT- Part 1: General requirements for safety
- IEC/EN 60601-1-2: Medical electrical equipment Part1: General requirements for safety- Collateral Standard: Electromagnetic Compatibility-Requirements and tests

- ISO15004-1: Ophthalmic instruments- Fundamental requirements and test methods

  General Requirements applicable to all Ophthalmic instrument
- ISO 8598-1: Optics and optical instruments – Focimeters – Part 1: General purpose instruments

1.5. Contraindications

Not applicable, there is no any contraindication.

1.6. Patient Requirement

Not applicable, there is no any patient requirement.

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.

⚠ WARNING

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

“Warning” signifie un danger qui peut causer des blessures graves, la mort ou des dommages matériels graves si vous ne faites pas attention.

⚠ NOTE

“Note” signifies important information about installation, operation or maintenance that can lead to a disaster when under negligence.

“Note” signifie des informations importantes sur l'installation, le fonctionnement ou la maintenance qui peuvent conduire à une catastrophe en cas de négligence.

⚠ CAUTION

“Caution” signifies an association with disaster that can cause minor injury or property damage if not careful.

“Caution” signifie une association avec une catastrophe qui peut causer des blessures mineures ou des dommages matériels si elle n'est pas prudente.

INFORMATION

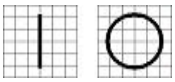
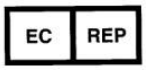
"Information" is to generate information needed on each page that is appropriate at the phase.

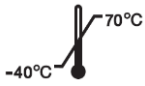
"Information" consiste à générer sur chaque page les informations nécessaires à la phase

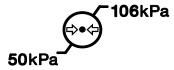
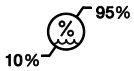
2.2. Safety Symbols

The International Electrotechnical 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 represent ON and OFF respectively. (O sur l'interrupteur d'alimentation représentent respectivement ON et OFF.)
	This symbol identifies a safety note. Ensure you understand the function of this control before using it. Control function is described in the appropriate User's or Service Manual. (Ce symbole identifie une note de sécurité. Assurez-vous de comprendre la fonction de ce contrôle avant de l'utiliser. La fonction de contrôle est décrite dans le manuel d'utilisation ou d'entretien approprié.)
	It indicates the year of manufacture and the manufacturer. (Il indique l'année de fabrication et le fabricant.)
	Manufacturer (Fabricant)
	Authorised Representative in the European Community (Représentant autorisé dans la Communauté européenne)
	Identifies the point where the system safety ground is fastened to the chassis. Protective earth connected to conductive parts of Class I equipment for safety purposes. (Identifie le point où la terre de sécurité du système est fixée au châssis. Terre de protection connectée aux parties conductrices des équipements de classe I à des fins de sécurité.)
	Alternating Current (Courant alternative)

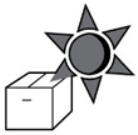
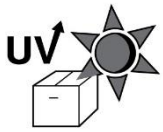
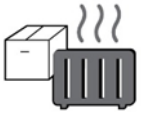
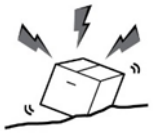
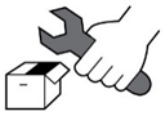
	Direct Current (Courant continu)
	Temperature Limitation (Limitation de température)
	Keep DRY (Garder au sec)
 UL60601-1 CAN/CSA C22.2 NO.601.1	MEDICAL- GENERAL EUIPMENT AS TO ELECTRICAL SHOCK, FIRE AND MECHANICAL HAZARDS ONLY IN ACCORDANCE WITH ANSI/AAMI ES60601-1:2005/A2:2021, CAN/CSA-C22.2 No. 60601-1 (Amendment 2:2022) (ÉQUIPEMENT MÉDICAL-GÉNÉRAL EN CE QUI CONCERNE LES CHOCS ÉLECTRIQUES, LES INCENDIES ET LES RISQUES MÉCANIQUES UNIQUEMENT CONFORMÉMENT À ANSI/AAMI ES60601-1:2005/A2:2021, CAN/CSA-C22.2 n° 60601-1 (Modification 2:2022)
	WEEE mark Disposal of your old appliance When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health. 4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product. (Mise au rebut de votre ancien appareil Lorsque ce symbole de poubelle barrée est joint à un produit, cela signifie que le produit est couvert par la directive européenne 2002/96 / CE. Tous les produits électriques et électroniques doivent être éliminés séparément du flux des déchets municipaux via des installations de collecte désignées par le gouvernement ou les autorités locales. L'élimination correcte de votre ancien appareil aidera à prévenir

	les conséquences négatives potentielles sur l'environnement et la santé humaine. 4. Pour plus d'informations sur l'élimination de votre ancien appareil, veuillez contacter votre mairie, le service d'élimination des déchets ou le magasin où vous avez acheté le produit.)
CE	CE Mark (Marque CE)
CE RoHS	CE for RoHS RoHS Directive Compliance 2011/65/EU (CE pour RoHS Conformité à la directive RoHS 2011/65 / UE)
	Atmospheric pressure limitation (Limitation de pression atmosphérique)
	Humidity limitation (Limite d'humidité)
	Stack direction (Direction de la pile)
	Fragile , handle with care (Fragile, manipuler avec soin)
	Keep away from sunlight (Tenir à l'écart de la lumière du soleil)
	Stack layer limitation (Limiter la couche de pile)

	Use no hooks (N'utilisez aucun crochet)
	Refer to Instruction Manual/Booklet (Se reporter au manuel d'instructions / brochure)
	COM Connector cable Symbol (COM Connector cable Symbole)
	Serial Number Symbol (Symbole du numéro de série)
	Authorised Representative in Switzerland (Représentant autorisé dans la Sussie)
	To indicate this product is Medical device (Pour indiquer que ce produit est un dispositif medical)

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.
	Where there are big changes in temperature Operation condition is from 10°C to 35°C (Humidity: 30 ~ 90%).
	A place nearby a heating apparatus.
	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 excessive pressure or vibration.
	A place where the equipment can be exposed to chemical substances or flammable gas.
	Watch out for dust, especially metal pieces from entering the equipment.
	Do not disassemble the product. Huvitz will not be held responsible for any negligence regarding such action.



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.

This instrument can withstand the following conditions:

1. Operation

- An ambient temperature range of 10℃ ~ 35℃ (50°F ~ 95°F)
- A relative humidity range of 30% ~ 90% (with non-condensing)
- An atmospheric pressure range of 800 ~ 1060hpa

2. Transportation

- An ambient temperature range of -40℃ ~ 70℃ (-40F ~ 158°F)
- A relative humidity range of 10% ~ 95%
- An atmosphere pressure range of 500 ~ 1060hpa

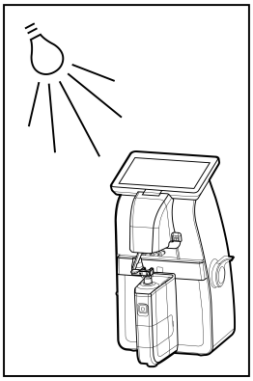
3. Storage

- An ambient temperature range of -10℃ ~ 55℃ (14°F ~ 131°F)
- A relative humidity range of 10% ~ 95% (with non-condensing)
- An atmosphere pressure range of 700 ~ 1060hpa

Avoid environments where the equipment is exposed to excessive shocks or vibrations.
Do not expose products or packing to environmental conditions outside of those specified above.

NOTE

- Avoid installing the device on a place where it is exposed to direct sunlight or near the illumination. In particular, ensure that the device is not illuminated by a spot light from the upper front.
- Before putting the device on a light-reflecting surface such as a glass showcase or a shiny table, put a cloth on it. Reflected light such as illumination may adversely affect measurements.



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 place the equipment in places where water can splash, drop or sprinkled. Do not place an object containing liquid or gas above 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 Huvitz or a person with equivalent certification.

5. Customer's care over this equipment shall be done only according to the User Manual and Service Instruction. Any other maintenance shall be done by service personnel at Huvitz or a person with equivalent certification.

6. Manufacturer shall be held responsible for safety, reliability and completion of this equipment when the following requirements are met: (1) Electrical installation in each room is in accordance with specifications in this instruction. (2) This equipment is used, operated and maintained according to this Instruction and Service Instruction.

7. Manufacturer will not be held responsible for damages by unauthorized alteration. Such alteration is a threat to customers' rights specified in warranty.

8. This equipment shall be used with supplementary articles provided by Huvitz. If a customer intends to use supplementary articles of other manufacturers, user safety of those articles shall be inspected and certified by Huvitz or manufacturers of those articles.

9. Only persons with appropriate training and education can be certified for capability to install, use, operate and maintain this equipment.

10. Please keep User Manual and Service Instruction in an easily accessible place.

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. Do not block the air grafting or holes.

16. Immediately turn off the power and remove plug when smoke, flame, unusual noise or smell is detected from the equipment.

17. 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 device(s) are connected
    D. Consult the manufacturer or field service technician for help

18. "External equipment intended for connection to signal input, signal output or other connectors, shall comply with relevant IEC standard (e.g., IEC 60950 for IT equipment and IEC 60601 series for medical electrical equipment). In addition, all such combinations - systems - shall comply with the standard IEC 60601-1-1, Safety requirements for medical electrical systems. Any person who connects external equipment to signal input, signal output or other connectors has formed at system and is therefore responsible for the system to comply with the requirements of IEC60601-1-1. If, in doubt, contact qualified technician or your local representative." (Or some cases, for example LCD Monitor, "This device is intended to connect to the medical device only, which complies with standards of IEC 60601 series.")

19. To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth

20. Do not position the equipment so that it is difficult to operate the disconnecting device (disconnecting device: power cord, appliance inlet, etc.)

21. The accurate and precise performance of a lensmeter over its working life cannot be assumed. Checking before purchase or periodically with a set of lenses and some dark sunglass tints will indicate the suitability of a lensmeter
    .

22. In the event of a serious incident involving the device, the user shall report it to the manufacturer and the competent authority of the Member State in which the user and/or patient are established.

23. When packing box is unintentionally open before use or damaged, please call A/S center.

24. Don't transmit data to other device when you find viruses in other device.

25. The connection of the electronic interface to an IT network that includes other equipment could result in previously unidentified risks to patients, users or third parties.

26. Subsequent changes to the IT-NETWORK could introduce new RISKS and require additional analysis.
    Changes to the IT-NETWORK include:
    1) changes in IT-NETWORK configuration
    2) addition of items (hardware platforms or software applications) to the IT-NETWORK
    3) removal of items from the IT-NETWORK
    4) update of hardware platforms or software applications on the ITNETWORK
    5) upgrade of hardware platforms or software applications on the IT NETWORK.

⚠ CAUTION

For use of equipment in rated voltage less than 125Vac, minimum 6A,Type SJT or SVT , 18/3AWG,10A, max 3.0m long : One end with Hospital Grade Type, NEMA 5-15P Other end with appliance coupler. For use of equipment in rated voltage less than 250Vac, minimum 6A, Type SJT or SVT, 18/3AWG, 10A, max 3.0m long : One end terminated with blade attachment plug(HAR) Type, NEMA 6-15P.

Pour l'utilisation d'équipements à une tension nominale inférieure à 125 Vca, minimum 6 A, type SJT ou SVT, 18 / 3AWG, 10 A, max 3,0 m de long: une extrémité avec type hospitalier, NEMA 5-15P Autre extrémité avec coupleur d'appareil. Pour l'utilisation d'équipement à une tension nominale inférieure à 250 Vca, minimum 6 A, type SJT ou SVT, 18 / 3AWG, 10 A, max 3,0 m de long: une extrémité terminée par un connecteur de lame (HAR), NEMA 6-15P.

3

Feature

1. Quick and convenient measurement of refraction and center of a lens.
2. When measuring an eyeglass, single/both PD are measure automatically with refraction of each lens.
3. Measurement of UV and Blue transmission of a lens.
4. Wide range of measurement from –25D to +25D.
5. More precise measurement with unit as small as 0.01D.
6. Quick and convenient measurement of progressive multifocal lens and general multifocal lens.
7. Various and splendid screen through color LCD.
8. Provide customers with measurement results using printing function.

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 lens 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 a 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.

9. Remove power plug and consult with a dealer when smoke, unusual smell or noise is detected during operation.

10. Do not turn off screen saver without any apparent reasons. This equipment protects its screen through screen saver.

5

Device Configuration and Operation Flow

5.1. Device Configuration - Main Parts

1. Touch LCD Screen

   : Display the lens measurement screen.

2. PD Sensor

   : Used to measure PD value.

3. 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.

4. Lens Cap

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

5. Printer

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

6. UV, BLUE Cover

7. Marking Lever

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

8. 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)

9. Lens Table Lever

   : Moves the lens table forward and backward.

10. MEM Button (Save Button)

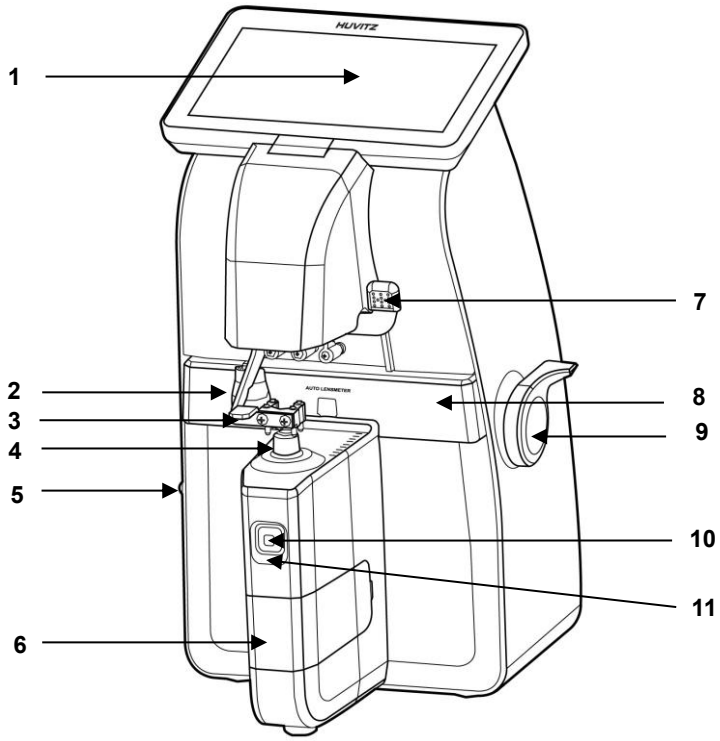
    : Used to read measured data.

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

11. LED Lamp

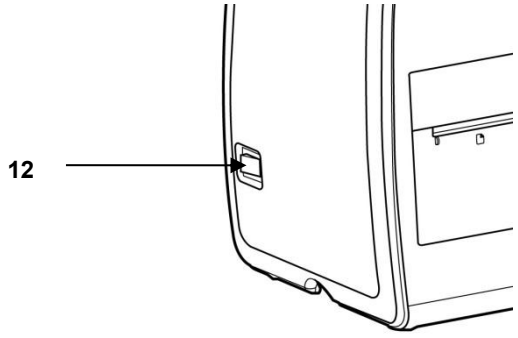
    : Indicates On, Off or blinking of the power to the device.

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



[Names of parts (I) - Front]

12. Power Switch
    : Switch for power on, off.



[Names of Parts (II) - Back]

13. RS-232 Connector

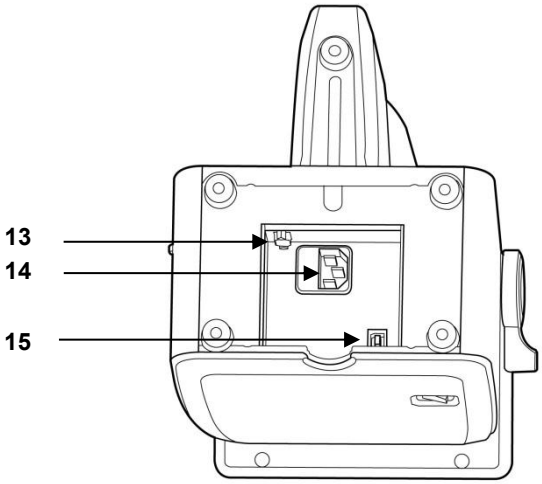
    : A terminal connecting to the exterior equipment

14. Power Connector

    : Used to connect a removal power cord.

15. USB Connector

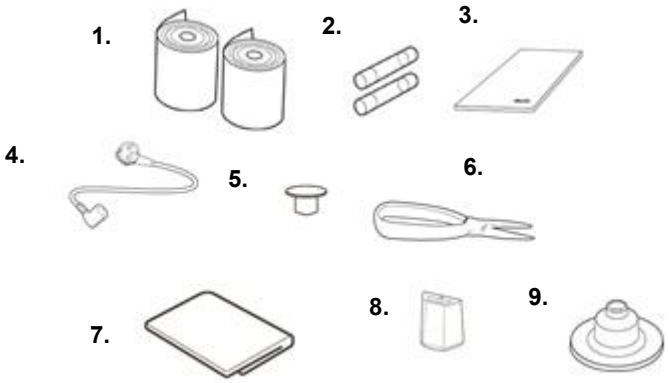
    : Connection terminal for product upgrade.



[Names of parts (III) – Bottom]

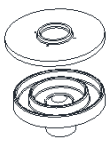
5.2. Device Configuration – Standard Accessories

1. Printing Paper: 2 roll of paper for printing
2. Fuse (250V 3.15A): (2)
3. User Manual: Operation guide for users
4. Power Cable (1.5m)
5. Dust Preventive Cap: a cap to prevent dust from entering (1)
6. Contact lens tweezer: a tool to pick up contact lenses
7. Dust Cover: a plastic cover to prevent dust from entering
8. Small PD rubber: to measure PD on eyeglass frames for children
9. Contact lens support (Contact lens Cap): (1)



[Standard Accessories]

*optional: Wet Measuring Kit for measuring a soft contact lens



[Wet Measuring Kit]

5.3. Operation Flow

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▼		
Measurement (Print)	7. Button Composition	Page.25
	8. Screen Composition	Page.28
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6

Equipment Installation and Preparation

6.1. Parts Inspection

1. Inspect supplementary articles.

   Open the box and make sure all articles are there (printing paper, dust cover, lens towel, User Manual and etc.).

2. Remove protection tapes.

   Remove protection tapes on lens holder, lens cap, marking lever and UV, Blue cover.

6.2. Start-up Test

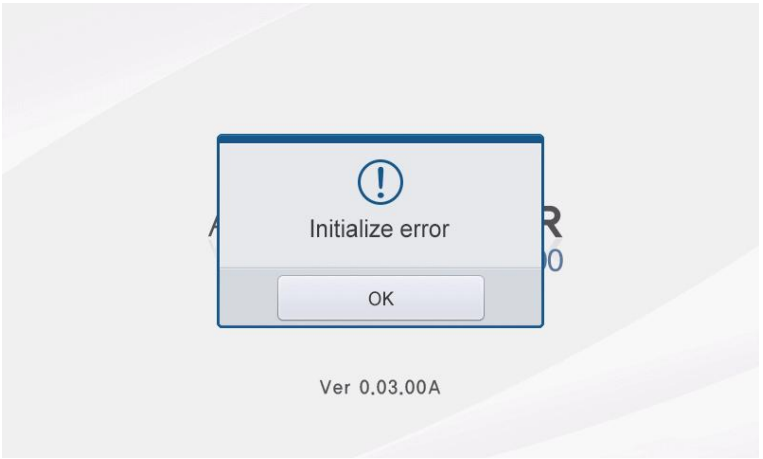
1. Connect power cable.

   Connect the cable to the power consent on the bottom parts of equipment to provide power.

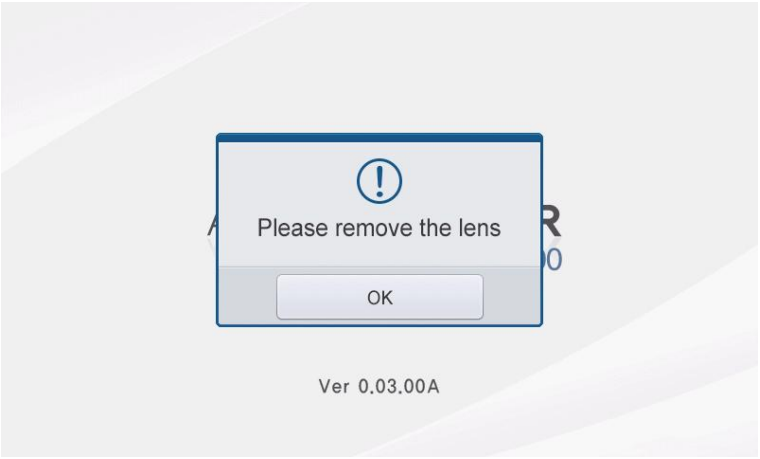
2. Inspect initial state.

   Make sure the equipment operates properly after turning on the power switch. While the equipment is starting up, check to see of there are not any objects placed on the lens cap. If a problem occurs during start up, LCD screen will display the message below.

When an error message appears as the below, check the lens cap or pinhole. Inspection process during start up is as the following:



[Screen showing an initialize error (1)]



[Screen showing an initialize error (2)]

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], 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.

c. If a message that says, “Please remove the lens” is displayed as shown in [Picture: Screen showing an initialize error], remove the lens from the lens cap, and press “OK” button to enter to measurement screen.

d. If S, C and A are not 0, clean the pinhole (Refer to Chapter 10.7 ‘How to Clean Pinhole’), turn off the equipment and turn it back on. If the problem continues, inquire with authorized seller or manufacturer.

6.3. Screen Saver

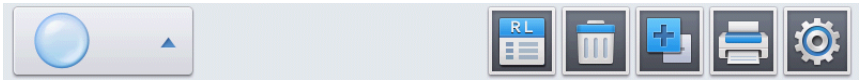
Screen saver will start automatically after a few minutes of non-operation. Screen saver protects display unit by constantly changing the screen. Touch the screen or press MEM button (save button) to go back to measurement screen. Do not turn off screen saver from Set up screen without any apparent reason.

7

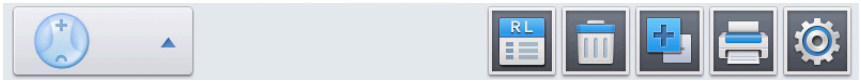
Button Composition

7.1. Button Composition According to Measuring Mode

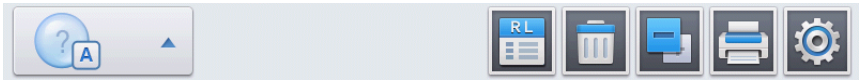
- General Lens Measurement Screen Buttons



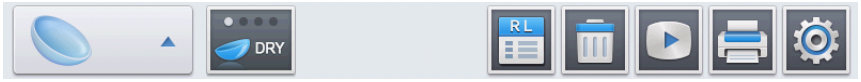
- Progressive Lens Measurement Screen Buttons



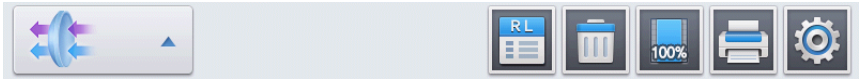
- Auto Detect Mode (General/ Progressive Lens) Measurement Screen Buttons



- Contact Lens Measurement Screen Buttons



- UV, BLUE Lens Measurement Screen Buttons



[Screen change according to button selection]

7.2. Use of Buttons



General Lens

Screen to measure general lens (including lens for sunglasses)



Progressive Lens

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, BLUE Lens

Screen to measure UV, BLUE lens



S->R

Change to left/right lens or left/right of an eyeglass on single eye lens.



R/L->S

Change from left/right lens of eyeglass to single eye lens mode.



CLEAR

Initialize data.



TRNS

Reverse signs on cylinder value.

 **PRINT**

Print out current data and delete data information.

 **SETUP**

Change screen to settings.

 **START / STOP**

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



CAL

Adjust current transmission to 100% on UV, BLUE measurement screen.



CON MODE

Change measure mode of contact lens (Dry, Wet 38%, 45%, 58%).

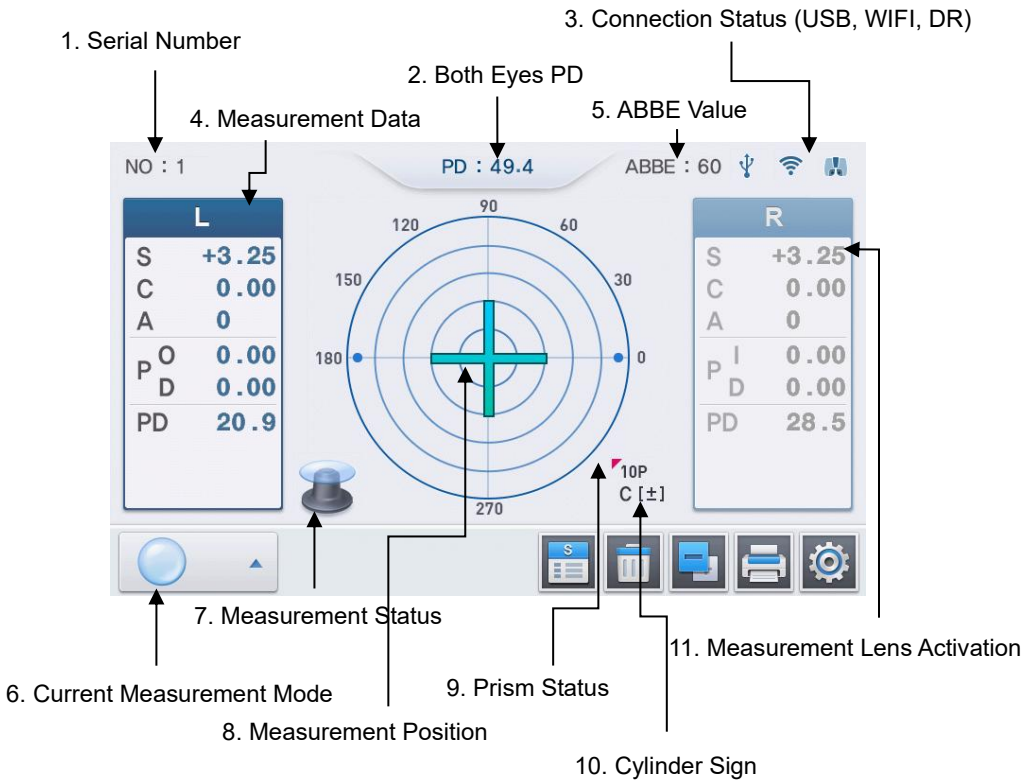
MEM (Save) Button

Save current measurement.

8

Screen Composition

8.1. Measurement Screen



[Basic screen composition]

8.1.1. Specifics

1. Serial Number

   Serial number is marked for customer identification.

2. Both Eyes PD

   Both Eyes PD, a sum of left PD and right PD is marked.

3. Connection Status (USB, WIFI, DR)

   USB, WIFI and DR (phoropter) connection statuses are marked.

4. Measurement Data

Measurement data is marked. Each article signifies the below.

- S: Basic refraction
- C: Cylinder
- A: Cylinder axis
- P: Prism X, Prism Y
- PD: RPD or LPD
- ADD (for Bi focal lens): Progressive power 1, Progressive power 2

5. ABBE Value

Current ABBE setting is marked.

6. Current Measurement Mode

Indicates the type of lens (general, progressive multifocal, Auto detect mode, contact or UV, BLUE) currently being measured.

7. 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.

INFORMATION

Curved lens indicates a general lens has been placed on the lens cap.

8. Measurement Position

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

- : Center is aligned within 0.5 prisms.
- : Center is precisely aligned, and measuring point can be marked after angle adjustment.
- : Indicates a place being measured.

9. Prism Status

Select among 5 prisms, 10 prisms, 15 prisms and 20 prisms on screen.

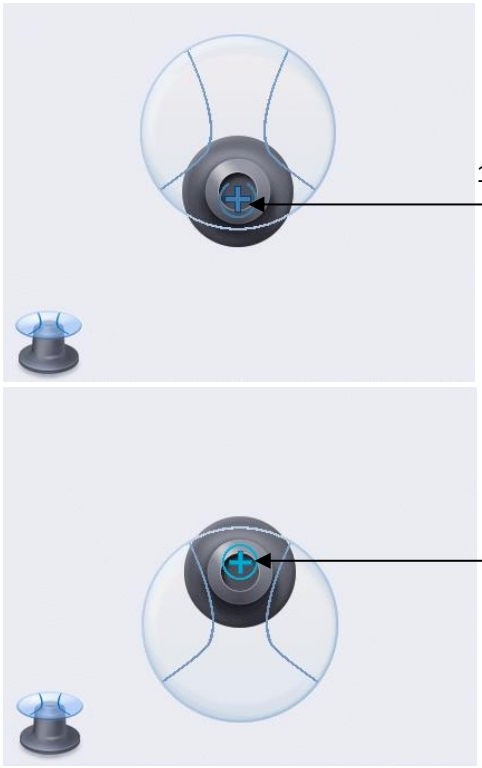
10. Cylinder Sign

Current cylinder sign is marked as ±, + or - .

11. Measurement Lens Activation

Indicates the type of lens (single lens, left or right) currently being measured.

8.2. Progressive Lens Screen



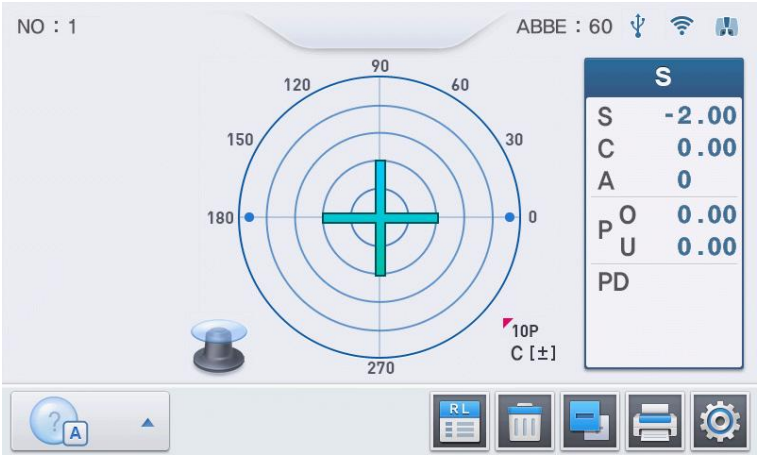
[Progressive lens screen composition]

8.2.1. Specifics

1. Distance viewing zone Measurement Position
   Position of current measurement is indicated while searching for the center of distance viewing zone.

2. Near viewing zone Measurement Position
   Position of current measurement is indicated while searching for the center of near viewing zone.

8.3. Auto Detect Mode

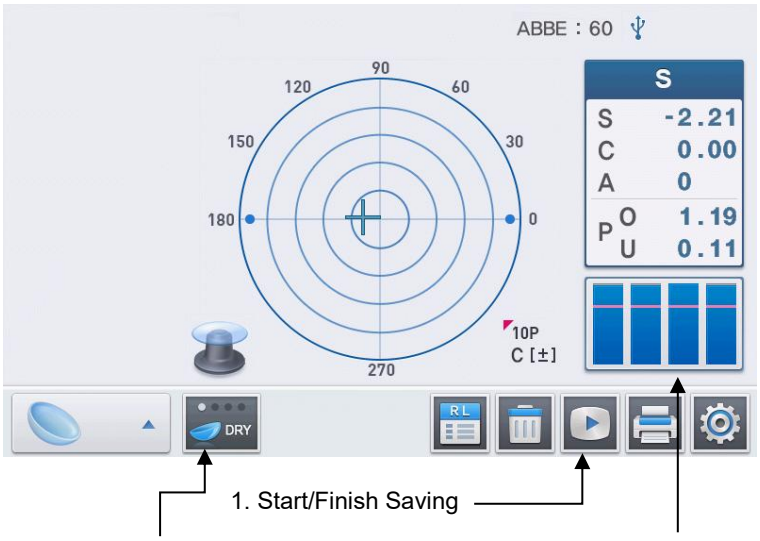


[Auto detect mode screen composition]

8.3.1. Specifics

Automatically 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.

8.4. Contact Lens Screen



[Contact lens screen composition]

8.4.1. Specifics

1. Start/Finish Saving

   Start recording results of consecutive measurement. Start saving button will change its shape to finish saving button after pressing it. (Finish: Average of all measurement results are calculated and saved.)

2. Reliability Graph

   It will show the sizes of recognized dots proportionally. If any one of the dots is lower than the baseline, the measurement value at the moment will not be considered.

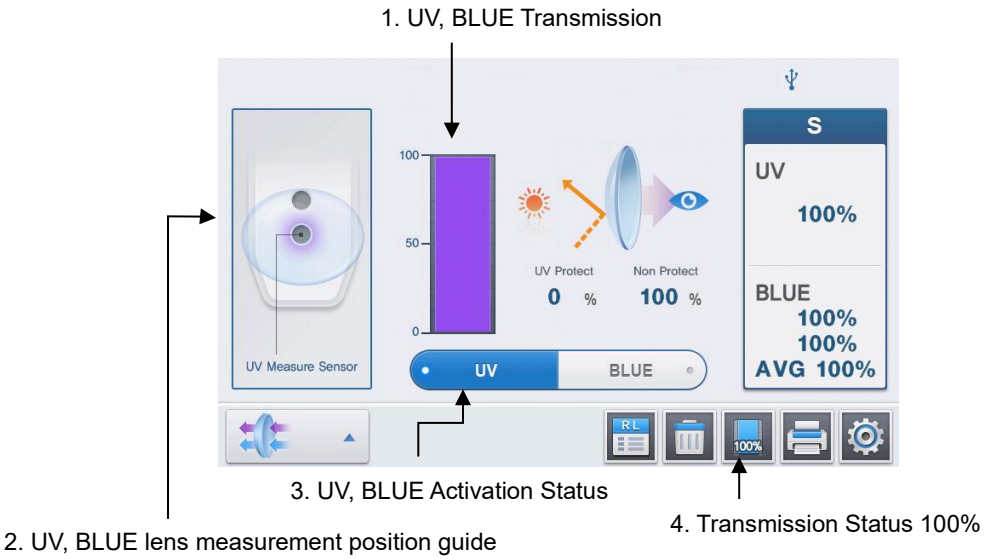
3. Measurement Method Selection(Dry/Wet)

   Choose measurement method of contact lens. Dry is a normal method as before. Wet measurement can select values of water immersion among 38%, 45% and 58%. In order to use it, have to purchase wet measuring toolkit.

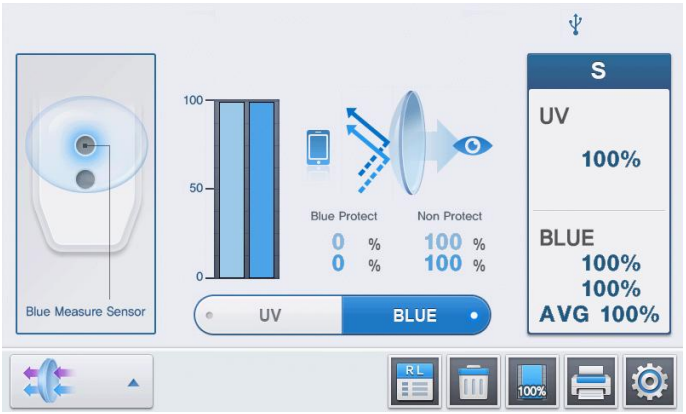
INFORMATION

Wet measurement supports only SPH lens.
If using low power lens within -1D ~ +1D may not be measured properly.

8.5. UV, BLUE Screen



[UV screen composition]



[BLUE screen composition]

8.5.1. Specifics

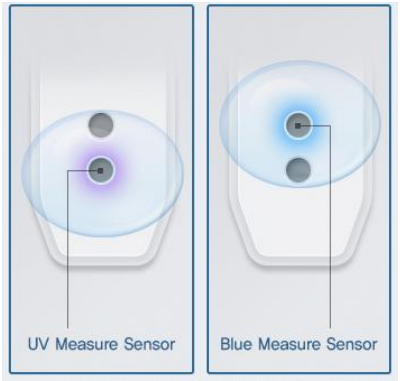
1. UV, BLUE Transmission

   UV, BLUE transmission of lens is indicated in a bar graph and percentage.
   BLUE measurement is operated by using two kind of LED and AVG shows those of average value.

INFORMATION

Two wavelengths for BLUE measurements are 420nm and 450nm.
(cf. UV wavelengths : 395nm)

2. UV, BLUE lens measurement position guide



[UV] [Blue]

[UV, BLUE screen composition]

3. UV, BLUE Activation Status

   Select to measure UV transmission or BLUE transmission.

4. Transmission Status 100%

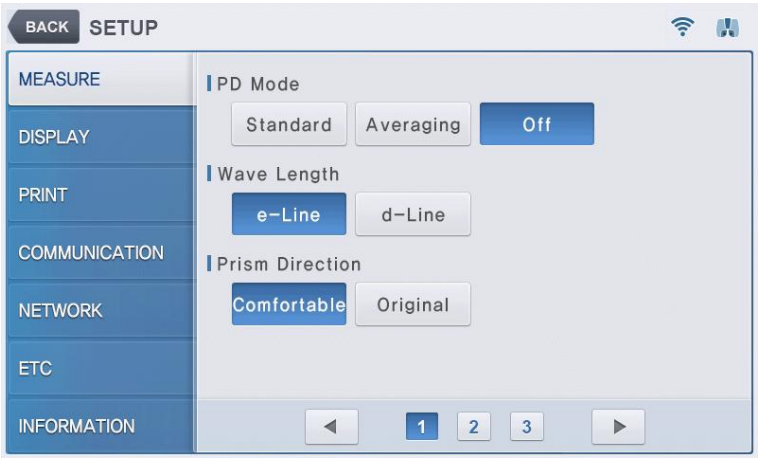
   Adjust current transmission status to 100%.

NOTE

1. To minimize the error, press the button 'Transmission Status 100%' first and then put a measuring lens.
2. Measurement should operate in bottom side and it can reduce measuring error.
3. Fluorescent lamp or other lamp can affect blue result.

8.6. Setup Screen

8.6.1. Specifics



[Setup screen composition - MEASURE]

PD Mode

Choose to enable PD function.
- Standard: Enable the function.
- Averaging: Set to equalize RPD and LPD when the difference between RPD and LPD is less than 3mm.
- Off: Disable PD function.

Wave Length

- e-Line: Mark refraction based on e-Line.
- d-Line: Mark refraction based on d-Line.

Prism Direction

Set direction of cross mark movement on measurement screen.
- 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.

Storage Mode

Choose to enable a function to automatically save lens data when the center of the lens is aligned.
- Auto Full: Auto-save the data from both general and progressive lenses.
- Auto Nrm: Auto-save the data from general lenses.
- Auto Prg: Auto-save the data from progressive lenses. (Both distance viewing zone and near viewing zone data will be saved.)
- Manual: Disable the function.

Side Allocation

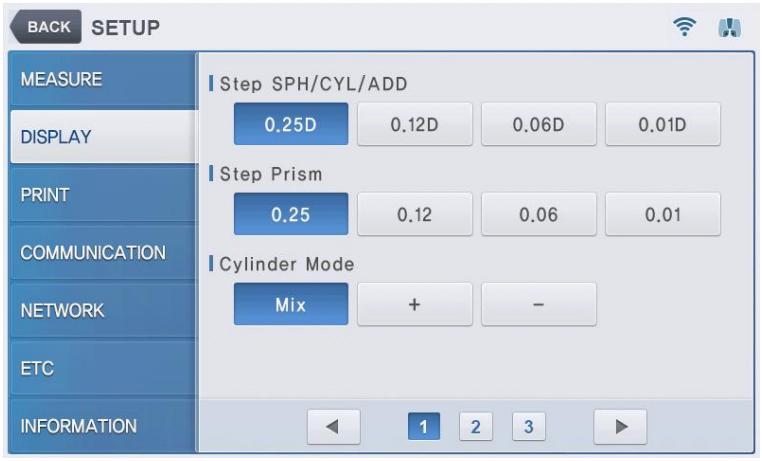
Choose to enable auto-determination of left/right lens function.
- Auto SRL: Enable the function.
(Initial mode is single lens measurement mode.)
- Auto RL: Enable the function.
(Initial mode is right lens measurement mode.)
- Manual: Disable the function.

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)

Contact Rec.

Choose to start/stop contact lens measurement during the duration user has set (unit: second) on contact lens measurement mode.
- Manual: User will start measurement by pressing [START] button, and stop by pressing [STOP] button.
- Automatic: Start/stop contact lens measurement during the duration user has set (unit: second). (Duration setting for consecutive measurement can be done on USER SETUP screen.)



[Set up screen composition - DISPLAY]

Step SPH/CYL/ADD

Set S, C and ADD value indication units.
- 0.25D: Set S, C and ADD value indication unit to 0.25.
- 0.12D: Set S, C and ADD value indication unit to 0.12.
- 0.06D: Set S, C and ADD value indication unit to 0.06.
- 0.01D: Set S, C and ADD value indication unit to 0.01.

Step Prism

Set P (Prism) value indication unit.
- 0.25: Set prism value indication unit to 0.25.
- 0.12: Set prism value indication unit to 0.12.
- 0.06: Set prism value indication unit to 0.06.
- 0.01: Set prism value indication unit to 0.01.

Cylinder Mode

Set how to indicate cylinder sign.
- Mix: Mark cylinder sign as (+) when average power is (+).
  Mark cylinder sign as (-) when average power is (-).
- +: Mark cylinder sign as (+) at all times.
- -: Mark cylinder sign as (-) at all times.

Prism Display

Set how to display prism.
- No Display: Do not display prism information.
- X Y: Display prism information using X and Y coordinate.
  * Data is represented by rectangular coordinates, depending on the position, horizontal(X) axis displays I(In) or O(Out), and the vertical(Y) axis displays U(Up) or D(Down) by the direction and size of the prism
- P B: Display prism information using absolute distance and angle.
  * Data is represented by polar coordinates and displays the direction and size of the prism with the distance(r) from the origin and direction(θ).
- mm: Display prism information using (x, y) coordinate in mm units by center deviation.

Prism Mode

Set prism display unit.
- 5P: Display based on 5 prisms.
- 10P: Display based on 10 prisms.
- 15P: Display based on 15 prisms.
- 20P: Display based on 20 prisms.

Blue Display Step

Set how to display Blue Step.
- 0-100: Display based on 0~100.
- 50-100: Display based on 50~100.
  (Less than 50% will only display data, the graph does not show on the screen.)

No. Display

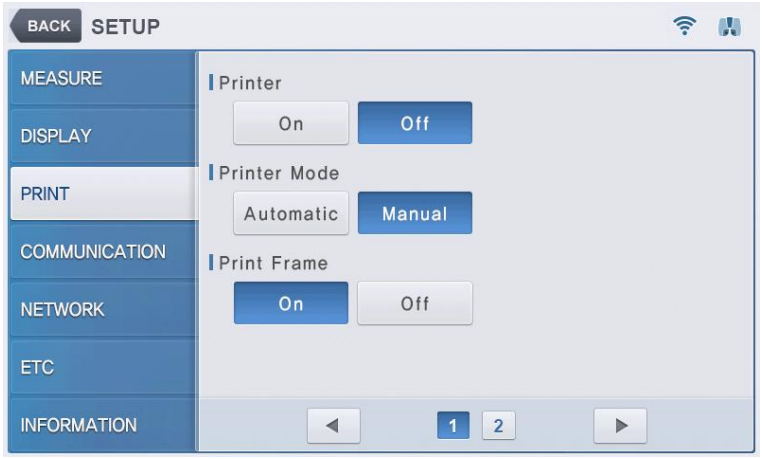
Choose whether to display customer's serial number on screen.
- On: Display on screen.
- Off: Do not display on screen.

Measure Display

Set how to display data.
- SCA: Set data to be displayed as S, C, A.
- S.E: Set data to be displayed as S.E.

Language

Select language to display user setting menu.
- English: Display menu in English.
- Chinese: Display menu in Chinese.
- French: Display menu in French.
- German: Display menu in German



[Set up screen composition - PRINT]

Printer

Set whether to use printing function.
- On: Enable the function.
- Off: Disable the function.

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 the lens is removed from the lens cap.
- Manual: Disable the function.

INFORMATION

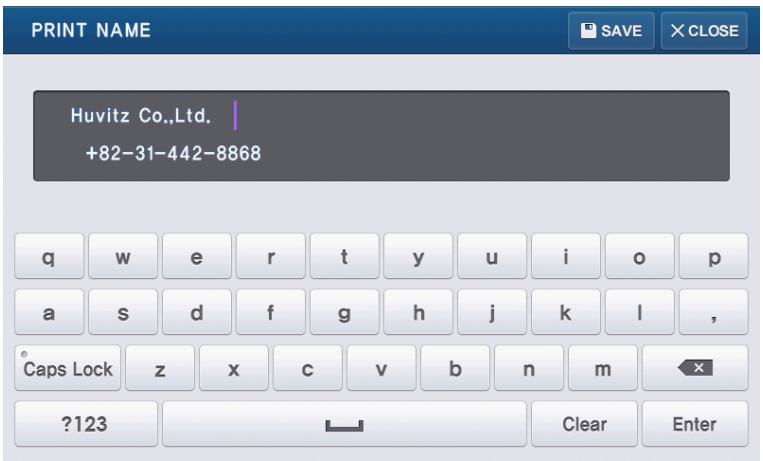
Perfect auto-measurement function can be used when ‘Storage Mode’, ‘Printer Mode’, ‘RS 232C’ and ‘Printer’ functions are enabled.

Print Frame

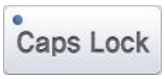
Choose whether to include the eyeglass drawing on paper when printing.
- On: Enable the function.
- Off: Disable the function.

Name

Enter name and phone number to print out.



[Name and phone number entry screen]



: Convert between upper case/lower case.



: Delete all texts.

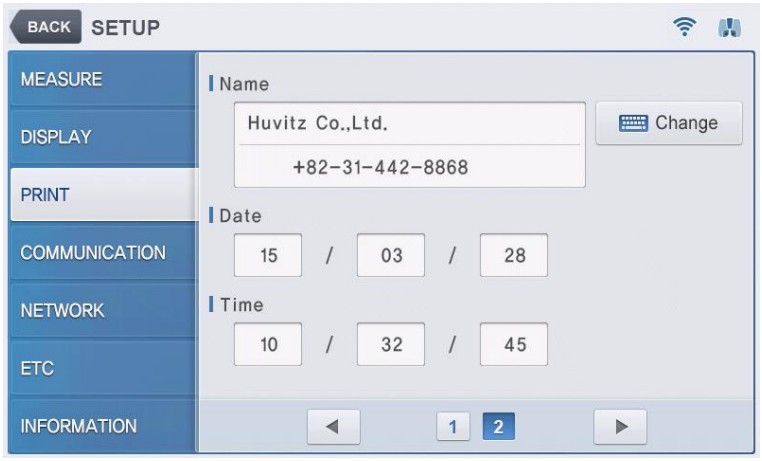

: (Back Space) delete one letter in front of the cursor.



: Change position of cursor from first line to and from second line.



: Save modified texts (name and phone number).



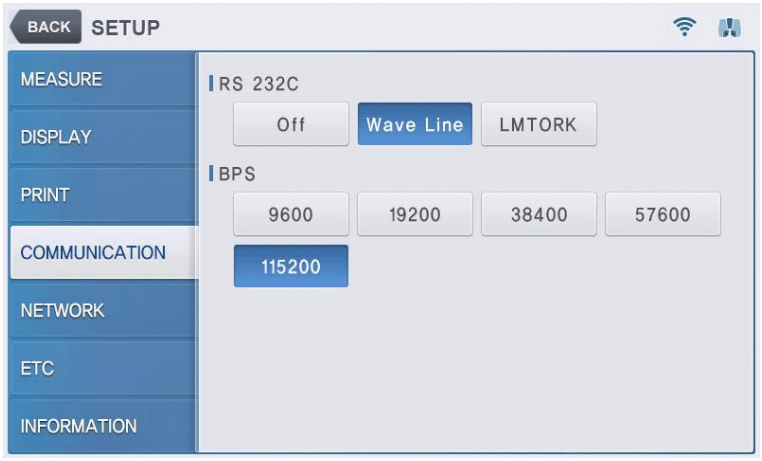
[Date and time setting screen]

Date

Choose and change date (year/month/day).

Time

Choose and change time (hour/minute/second).



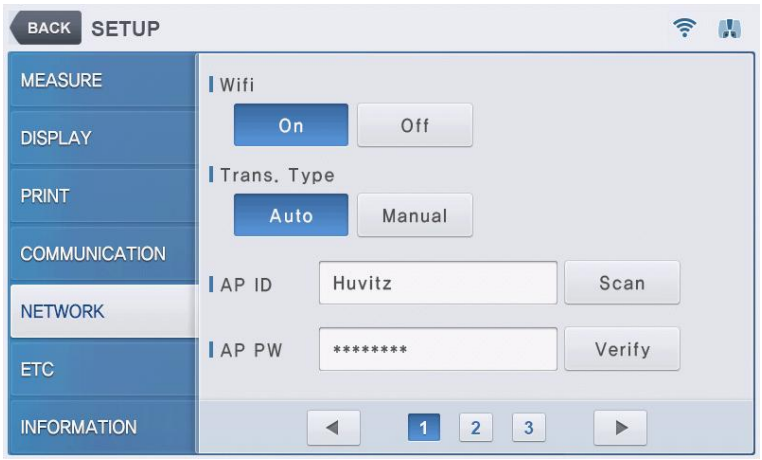
[Set up screen composition - COMMUNICATION]

RS 232C

Set RS-232C (external) communication protocol.
- OFF: Disable the function.
- Wave Line: Enable single direction communication protocol function between HLM and HRK, HDR.
- LMTORK: Enable bi-direction communication protocol function between HLM and HRK, HDR.

BPS

Set communication speed with outside.
- 9600: Set communication speed to 9600.
- 19200: Set communication speed to 19200.
- 38400: Set communication speed to 38400.
- 57600: Set communication speed to 57600.
- 115200: Set communication speed to 115200.



[Set up screen composition - NETWORK]

Wifi

Choose to enable/disable data transfer function through wireless communication using Wifi.
- On: Enable the function.
- Off: Disable the function.

Trans. Type

Select data transfer type for wireless communication data transfer using Wifi.
- Auto: Transfer data to all currently connected devices without consulting with user, and display the result.
(Connected devices can be selected using IP address on User Set Up screen -> NETWORK -> 2, 3 Page, and maximum four IP addresses can be selected.)
- Manual: Show connection information of selected devices, and user will manually choose which device(s) to transfer data.

AP ID

Enter a name for access point needed during the WPA2-PSK authorization process to connect to Wifi network.

AP ID - Scan

Automatically search for access point(s) currently available on the device, and choose from the list.

AP PW

Enter a password of access point needed during WPA2-PSK authentication to connect to Wifi network (letters of password will be displayed as * on screen.)

AP PW – Verify

Currently entered name and password of access point will be verified. Wifi connection will be disconnected during verification.
- Verifying password…: Password is being verified.
- AP Password is okay!: Entered password is correct, and the device can be connected to the access point.
- AP Password is invalid!: Password is incorrect.
- UNKNOWN ERROR: There was an error during connection process because the signal strength was too low or the access point is instable.

⚠ CAUTION

Wireless AP to be connected to this device should be set to WPA2-PSK when it comes to the security setting. Access may be restricted in case of the AP that is set to other wireless security.

The Company is not responsible for the problem that may result when accessing with the AP with unset security.

Le point d'accès sans fil à connecter à cet appareil doit être réglé sur WPA2-PSK en ce qui concerne le paramètre de sécurité. L'accès peut être restreint dans le cas où l'AP est réglé sur une autre sécurité sans fil.

La Société n'est pas responsable du problème qui peut survenir lors de l'accès avec l'AP avec une sécurité non définie.

IP ROOM NAME/IP Address 1 ~ 5

- ☑: Select opponent device(s) to transfer wireless communication data using Wifi (maximum four can be selected among 1~10 previously registered IP addresses.)
- ROOM: Touch on the name of opponent device to change its name for easier distinction.
- IP Address: Touch on the IP address of opponent device to change it IP address.

IP ROOM NAME/IP Address 6 ~ 10

- ☑: Select opponent device(s) to transfer wireless communication data using Wifi (maximum four can be selected among 1~10 previously registered IP addresses.)
- ROOM: Touch on the name of opponent device to change its name for easier distinction.
- IP Address: Touch on the IP address of opponent device to change it IP address.

CAUTION

IP of the HDR that this device wants to access to needs to use the static allocation IP Address that does not use the DHCP.
Access may not take place when DHCP function is used to try to access the device that uses allocated IP.

L'IP du HDR auquel cet appareil veut accéder doit utiliser l'adresse IP d'allocation statique qui n'utilise pas le DHCP.
L'accès peut ne pas avoir lieu lorsque la fonction DHCP est utilisée pour essayer d'accéder au périphérique qui utilise l'IP allouée.



[Set up screen composition - ETC]

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.

Sleep Mode

Enable/disable screen saver function.
- Off: Disable the function.
- 3min: Set the function with 3minute
- 5min: Set the function with 5minute
- 10min: Set the function with 10minute

Color Setting

Adjust color temperature of LCD display.
- COOL ~ WARM

LCD Brightness

Adjust brightness of LCD display.
- 10% ~ 100%



[Set up screen composition - INFORMATION]

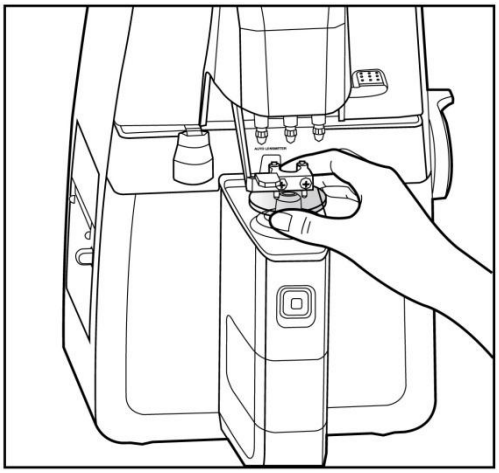
No. Reset

Reset customer serial number to 1.

9

Measurement

9.1. General Lens



[How to measure a general lens]

1. Reset measurement status by pressing ‘CLEAR’ button (). Set measurement lens on the top right corner of the screen to ‘S’. (However, ‘R’ will be displayed if ‘Side Allocation’ function is set to Auto RL on User Set Up screen.)

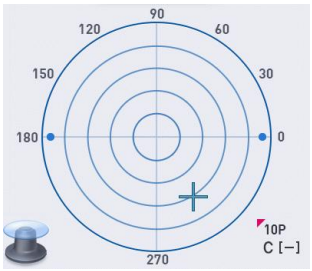
2. Place a lens on the lens cap and slightly move the lens holder upward and down.

3. Move the lens so the prism cross mark is placed on the center of the concentric circle.

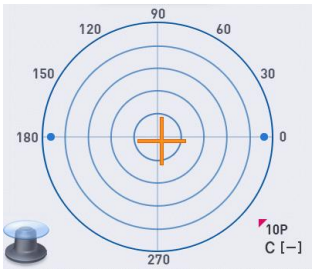
4. For a lens with astigmatism power, rotate the lens so the astigmatism angle is 180°.

INFORMATION

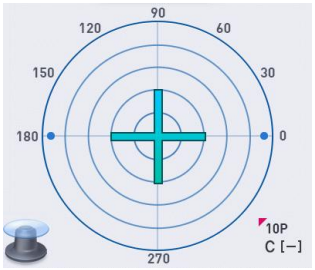
There is no need to adjust astigmatism angle to 180° when the lens is without astigmatism power or when there is no need to mark astigmatism focus and cylinder axis.



OFF center



ALIGNMENT OK



MARKING OK

[Focus adjustment]

5. Press ‘MEM’ button to save the measurement. Data will be fixated after saving the data. Pressing ‘MEM’ button once again will save and fixate modified measurement.

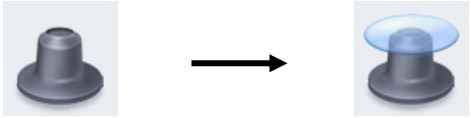
INFORMATION

‘Storage Mode’ function is to save measurement automatically 1 second after ‘MARKING OK’ display when the function is enabled in User Set Up screen.

6. Press ‘PRINT’ button to print out the measurement.

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 displayed even when there is not a lens placed on the actual lens cap, restart the equipment to operate automated set up to readjust zero point.

INFORMATION

A drawing of the lens cap with a lens will be displayed on the bottom left corner of the screen when a lens with power is placed.

CAUTION

After placing a lens on the lens cap, do not apply sudden pressure towards the downside, or make a rapid movement to avoid damaging/breaking the lens. Move the lens slowly and carefully.

Après avoir placé un objectif sur le capuchon de l'objectif, n'appliquez pas de pression soudaine vers le bas ou ne faites pas de mouvement rapide pour éviter d'endommager / casser l'objectif. Déplacez l'objectif lentement et avec précaution.

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

1. Activated data result screen indicates the lens currently being measured, and inactivated screen indicates the opposite side lens.
2. When Measuring, the lens direction should be measured in the same direction as [Picture: Eyeglass lens measurement] above, incorrect direction may give wrong result.

1. L'écran de résultat des données activées indique l'objectif actuellement mesuré, et l'écran inactivé indique l'objectif latéral opposé.
2. Lors de la mesure, la direction de l'objectif doit être mesurée dans la même direction que [Image: mesure de l'objectif de lunettes] ci-dessus, une direction incorrecte peut donner un résultat incorrect.

2. Place the right lens on the lens cap and pull down the lens holder.

3. After PD function is on, place the PD position censor on the center of the eyeglass frame.

4. Press ‘MEM’ button to save the measurement.

5. Pull up the lens holder and place the left lens.

CAUTION

Left/right lens will be automatically determined if PD function is enabled according to the positioning of PD censor. 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.

L'objectif gauche / droit sera automatiquement déterminé si la fonction PD est activée en fonction du positionnement de la censure PD. Cette fonction de détermination de l'objectif est priorisée avant la fonction de sélection d'objectif à l'aide du bouton «S-> R» (), et la sélection effectuée à l'aide du bouton «S-> R» () sera ignorée.

CAUTION

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

Lorsque la fonction PD n'est pas disponible ou désactivée, ou lorsque la fonction d'attribution latérale est manuelle, appuyez sur le bouton «S-> R» () pour sélectionner un objectif à mesurer.

6. Adjust focus until 'MARKING OK' is displayed. After PD function is on, place the PD position censor 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 censor. In this case, PD position censor must be pulled over entirely to avoid interference between the lens and PD position censor.

CAUTION

If ‘Side Allocation’ function enabled to Auto SRL or Auto RL while PD function is disabled, make sure the ‘no lens’ icon is displayed on the bottom left corner of the screen after right lens measurement is completed before placing the left lens for Auto SRL or Auto RL function to work properly.

Si la fonction `` Allocation latérale '' est activée sur Auto SRL ou Auto RL alors que la fonction PD est désactivée, assurez-vous que l'icône `` pas d'objectif '' s'affiche dans le coin inférieur gauche de l'écran une fois la mesure de l'objectif droite terminée avant de placer l'objectif gauche pour Auto La fonction SRL ou Auto RL fonctionne correctement.

INFORMATION

When measuring PD on children’s eyeglass frame, change to “small PD rubber” before measurement.

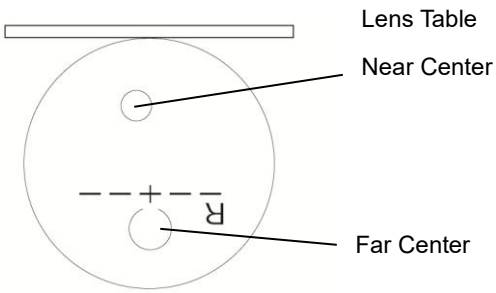
NOTE

For cylinder-only lenses, or sharply warped frames, the PD measurement accuracy may be lowered.

9.3. Progressive Multifocal Lens

9.3.1. Structure of Progressive Multifocal Lens

< A lens before processing >



[Structure of single progressive lens]

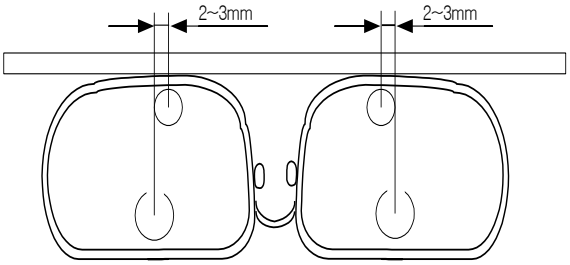
INFORMATION

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

INFORMATION

As shown on the [Picture: Structure of single progressive lens] above, distance viewing zone of the lens shall be placed near the lens table.

< Framed Lens >



[Structure of framed progressive lens]

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,

The best way of progressive measurement is that putting on the lens in with using lens holder.



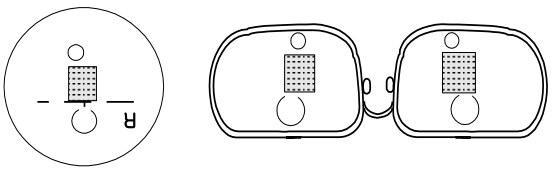
9.3.2. Judgment of Progressive Multifocal Lens

1. Make sure the icon on the bottom left of the screen is the same as the picture on the right.
2. Place the lens on the lens cap and wait for 1~2 seconds.



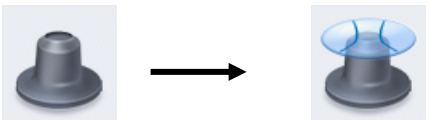
INFORMATION

It is advisable to place lens holder on the marked (▒) region (progressive band).



[Progressive band for autonomous judgment]

3. 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

When progressive power is smaller than 1D, automated judgment might not work. In such cases, press current Measurement Mode button () to change to progressive lens measurement mode manually.

INFORMATION

If the lens was not placed properly on 2, it will be displayed as general lens on 3.
In such cases, move the lens to progressive band, and it will be converted to progressive lens measurement screen.

9.3.3. Distance Viewing Zone Measurement

1. Move then lens to distance viewing zone. For an eyeglass lens, push till the leg on lens holder reaches the upper frame of the eyeglass.



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



3. Distance viewing zone power will be auto-saved when the cross mark reaches the distance viewing zone target center, and it will move on to near viewing zone measurement.

INFORMATION

It is difficult to auto-determine the distance viewing zone center for a lens with progressive band expanded to distance viewing zone. In such cases, move the cross mark near the distance viewing zone target center, and press 'MEM' button on a part with small distance viewing zone power fluctuation to set a distance viewing zone center forcibly.

INFORMATION

Both single lens and eyeglass lens shall be placed parallel to the lens table.

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

If the horizontal indicator is incorrect, move slightly to right for a right lens or to left for a left lens since near viewing zone center is moved 2~3 mm toward the frame center as mention in the framed lens structure.

2. Pull the lens till the near viewing zone horizontal indicator reaches the near viewing zone target. Progressive value will be auto-saved when the indicator reaches the target.



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

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

9.3.5. Troubleshoot during Progressive Lens Measurement (Auto Detect Mode)

1. When a progressive lens has failed to be auto-determined.

Cause 1	The lens might not be placed on progressive band.
Countermeasure	General lens icon is displayed on the bottom left corner of the screen. Move the lens to progressive band. Progressive lens icon will be displayed, and measurement screen will convert automatically.
Cause 2	If progressive power is smaller than 1D, it cannot be auto-determined.
Countermeasure	Move the lens near the near viewing zone- parts with largest progressive fluctuation. If it still cannot be determined automatically, press current Measurement Mode button to manually convert to progressive measurement screen.

2. When a general lens was determined as a progressive lens.

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.
Countermeasure	Adjust so the value minimized, and save by pressing ‘MEM’ button when progressive power reaches maximum. (Measurement can be slightly different with actual values.)

5. When progressive measurement is incorrect. (Especially when near viewing zone power is higher by more than –4D.)

Cause 1	It can be because the lens was picked up during measurement.
Countermeasure	Pull down the lens holder to fixate the lens and maintain the angle. Move the lens left-right or upward/downward.

6. When it is difficult to adjust horizontal position during near viewing zone measurement.

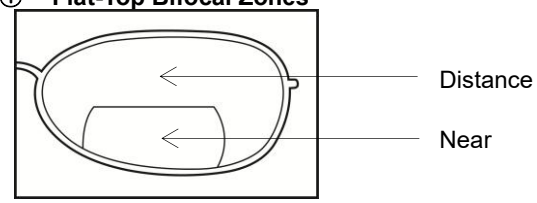
Cause 1	It can be because distance viewing zone center was measured incorrectly.
Countermeasure	Measure the distance viewing zone center again.

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

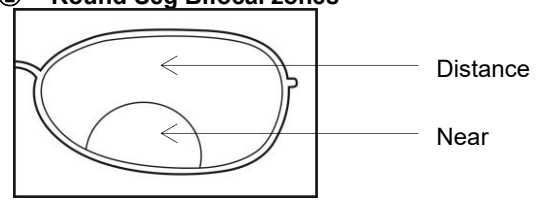
9.4.1. Structure of General Multifocal Lens

BIFOCAL LENS

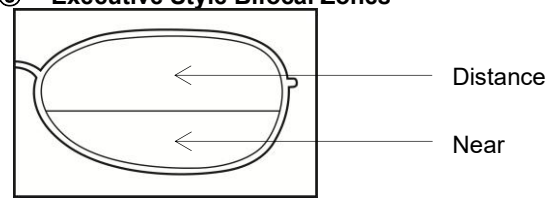
① **Flat-Top Bifocal Zones**



② **Round Seg Bifocal zones**

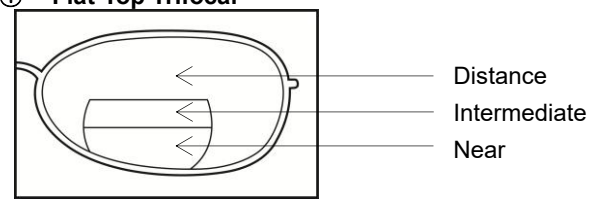


③ **Executive Style Bifocal Zones**

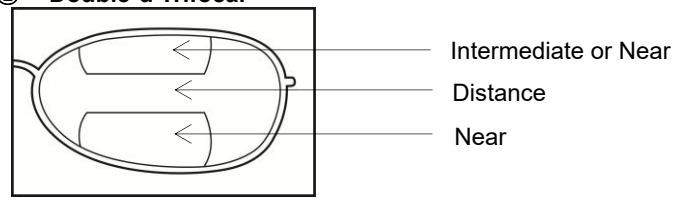


TRIFOCAL LENS

① **Flat-Top Trifocal**

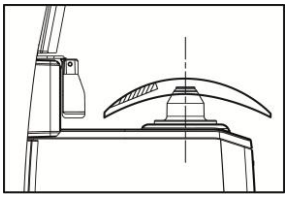


② **Double-d Trifocal**

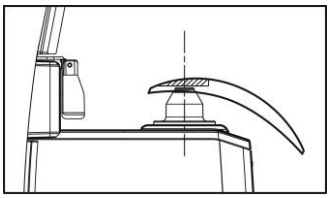


9.4.2. Measurement on General Screen

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 ‘ADD’ button ().
5. Place the lens on the third focal center, and press ‘MEM’ button. Second ‘ADD’ value will be saved.

INFORMATION

It is not necessary to align lens again when you measure Multifocal Lens.
Measure the near add power without removing the Multifocal Lens from lens support.

9.4.3. Measurement on Progressive Screen

1. To convert to progressive lens measurement screen, press Current Measurement Mode button (), and select Progressive Measurement Mode ().

2. Move the lens to the first focal center.
   Progressive measurement will be conducted automatically.
3. Move the lens to the second focal center, and progressive value will be measured automatically.

INFORMATION

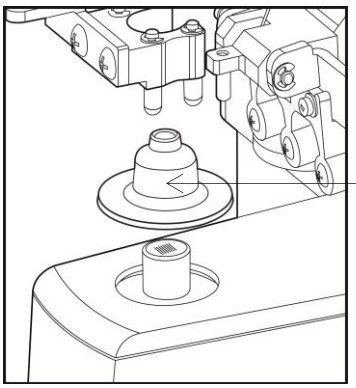
If auto-measurement does not work on each stage, or if you want to measure manually, press 'MEM' button to progress to the next step.

9.5. Contact Lens

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

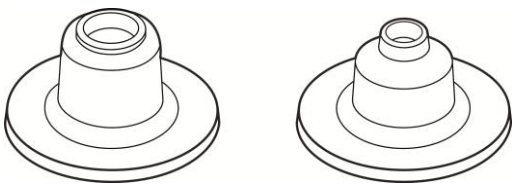
9.5.1. Dry measurement

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

- If moisture is left on the contact lens, moisture can cause measurement data errors.

- If you measure within 5 seconds after removing the contact lens moisture, you can increase the measurement accuracy.

5. For consecutive measurement, press 'START' button (), and press 'STOP' button () after few seconds.

INFORMATION

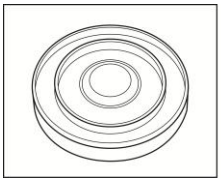
Measurement duration can be set in User Set Up screen. Also, enabling 'AUTO REC' function on settings will eliminate the need to press 'STOP' button () to stop consecutive measurement because it will stop automatically after set duration.

6. Press 'PRINT' button () to print out.

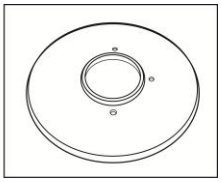
9.5.2. Wet measurement

INFORMATION

- Wet Measuring Kit Configuration.
(cf. Measurement Range : -9.5D ~ +4.5D)



< Kit Body >



< Kit Cover >

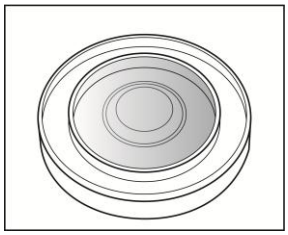
- Place the Wet Measuring Kit after removing the Lens Support.

Check if the reading on the kit in normal mode is “S 0D ±0.25”.

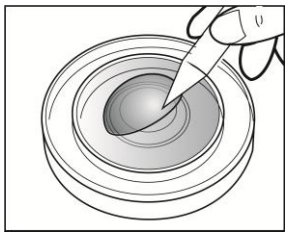
- If reading has a tolerance bigger than “S 0D±0.5”, the kit is considered damaged and reading is not reliable.

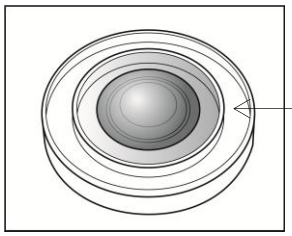
- Disregards C & A values.

1. Fill up inner circle of Wet Measuring Kit body with saline solution.

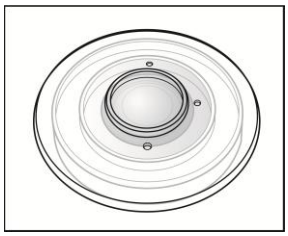


2. Place a lens at the center of the kit.
   Make sure to saline solution is poured enough to be completely sealed with cover.

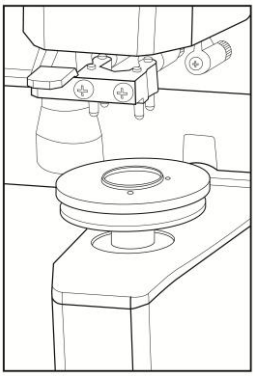




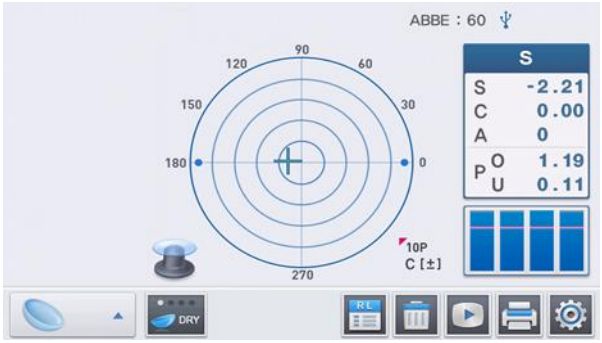
3. Place a cover in a right position (protruding part must be positioned upward)
   Kit must be completely sealed without any bubbles.



4. Remove lens support and place the Kit.



5. Turn the device into contact lens measuring mode.
   Press ‘DRY’ button to select the proper percentage of water content.
   Select the function percentage for the lens and proceed with the measurement.
   (38%, 45%, 58%)
   Measurement for one-day lens selects 58% regardless of the water content.



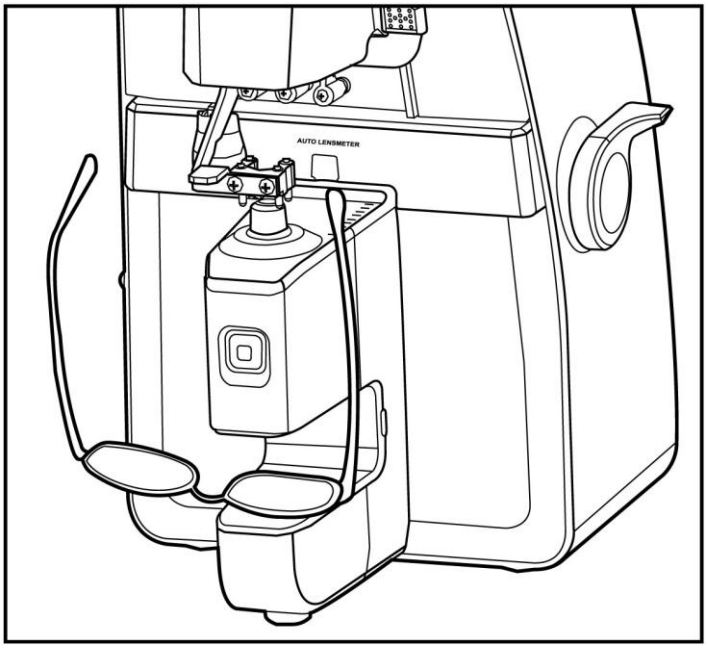
6. Press ‘MEM’ button to proceed with measurement.

7. Press ‘PRINT’ button () to print out.

⚠ CAUTION

When closing the cover of Kit, there should not be air bubble over the lens and measurement area.

9.6. UV, BLUE Transmission



[How to measure UV, BLUE transmission]

1. Press Measurement Mode button (), and select ‘UV, BLUE’ lens measurement mode ().
2. Pull out the UV, BLUE cover.
3. Press UV button on the screen, and select to activate the UV measurement area. (To measure BLUE, press BLUE button to activate the BLUE measurement area.)
4. When UV or BLUE transmission is not 100% without a lens, press ‘CAL’ button (

) to readjust UV or BLUE transmission to 100%.
5. Place a lens on the UV, BLUE optic unit.
6. Press ‘MEM’ button to save UV or BLUE transmission, and press ‘PRINT’ button () to print out the measurement.

NOTE

UV transmission is measured based on a plate without refraction, and there can be errors when measuring lenses with refraction.

NOTE

When UV or BLUE transmission is not 100% without a lens, press ‘CAL’ button (

) to readjust UV or BLUE transmission to 100%.

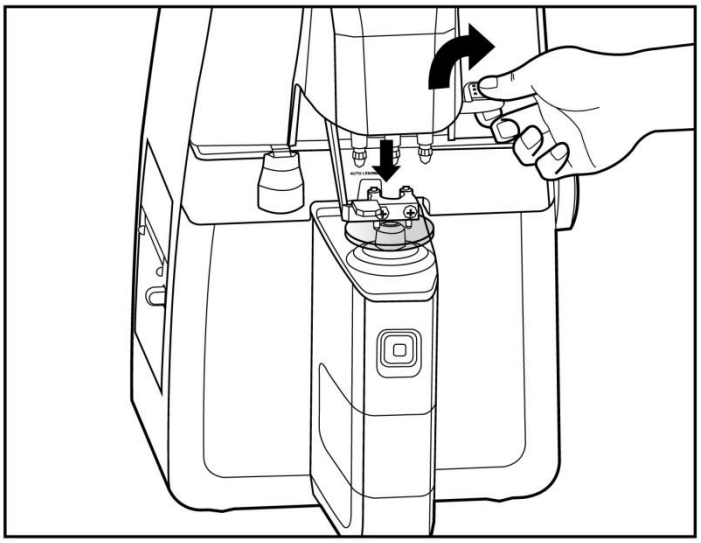
NOTE

Blue lens measuring light is in wavelength range of visible light, so measuring light is influenced by surrounding rays.
When measurement is conducted under conditions that direct interference of surrounding rays occurs, measurement shall be conducted under 1,000 lux.

9.7. Measuring Point Marking

9.7.1. Without Astigmatism

1. Place a lens on the lens cap, and move the lens until ‘MARKING OK’ 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]

9.7.2. With Astigmatism

1. Place a lens on the lens cap, and move until ‘MARKING OK’ is displayed.

2. Adjust lens to the angle on the prescription while maintaining ‘MARKING OK’.

3. Tilt the marking lever to 90 º to horizontal and mark.

9.8. Prism

1. Change to prism display format (XY, PB, mm) on the prescription. Display format can be modified on User Setup Screen (Prism Display)

2. Adjust lens so the prism display value on the screen accords with the prism value on the prescription

9.9. Measurement Data Transmission using WiFi

Measurement data can be transmitted to Huvitz Co. Ltd, phoropter using a WiFi network. Data can be transmitted without direct data cable connection using this function. Thus, it does not require any additional installations or take up installation spaces as it uses wireless network. Therefore, operations such as to install two equipment in different rooms on different floors are possible.

Maximum 10 phoropters can be registered, and up to four phoropters can be selected and used concurrently. Data can be transmitted to all connected phoropters or to selected phoropters according to user settings.
Transmittable data are as the following.

- Serial number.
- Lens measurement data (Spherical, Cylinder, Axis, Prism, PD, Add)

INFORMATION

When Wifi access attempts, if you do not continue to attempt to access, the operation may not be smooth.

9.9.1. WiFi Environment Setting

1. Set the Access Point (AP) to provide WiFi network.

   AP setting can vary in different manufacturers. Thus, set as the below referring to manual of each product.

   - Use Protocol: IEEE802.11b 2.4GHz WiFi
   - IP Assignment Mode: DHCP
   - Encryption Method: WPA2-PSK
   - AP SSID: A name to distinguish AP. Set as you like.
   - AP PASSWORD: Password. Set as you like.

   After setting, please remember the AP SSID and AP PASSWORD to connect to WiFi network.

2. WiFi Network Setting for Phoropter

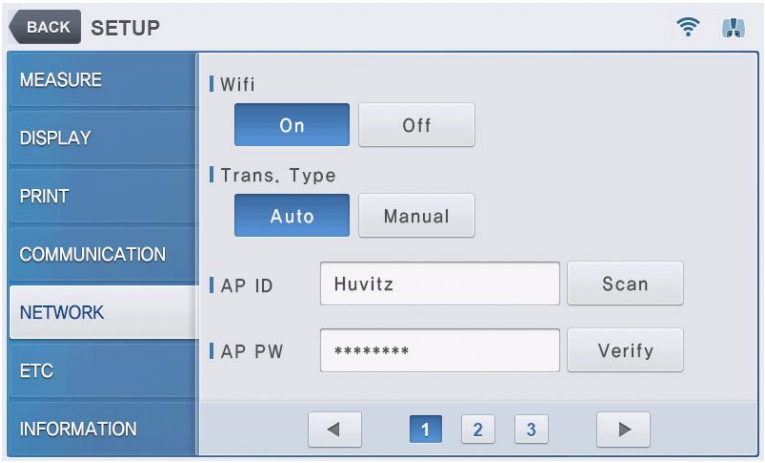
   Set up environment to connect to AP set on 1. by referring to the manual of a phoropter. After setting up the environment, please remember the assigned IP address.

⚠ CAUTION

Use the static allocation IP Address that does not use the IP of the HDR that this device wants to access.
When trying to access the device that uses the allocated IP by using DHCP function, access may not take place.

Utilisez l'adresse IP d'allocation statique qui n'utilise pas l'IP du HDR auquel cet appareil veut accéder. Lorsque vous essayez d'accéder au périphérique qui utilise l'IP allouée à l'aide de la fonction DHCP, l'accès peut ne pas avoir lieu.

3. WiFi Network Setting for lensmeter



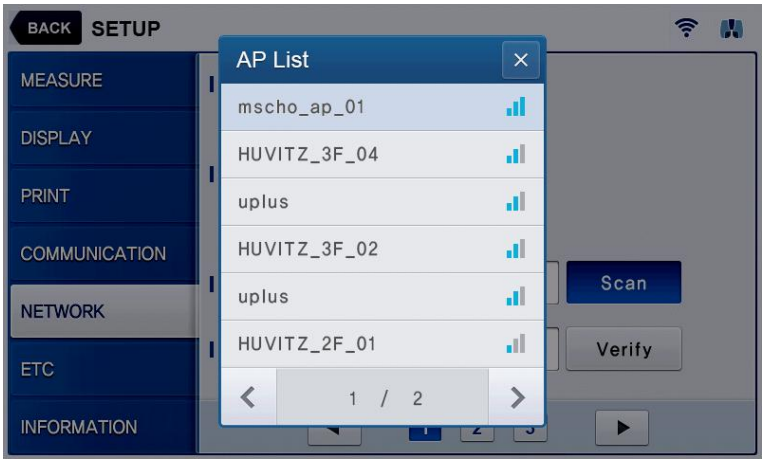
[WiFi Network Setting Screen]

① Convert to User SETUP Mode, and select WIFI on page 2.

② Turn on WiFi to use transmission function.

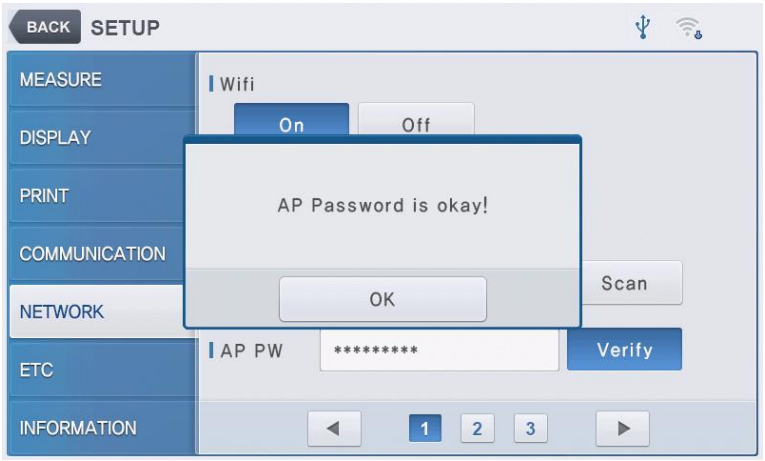
③ Set TRANSFER TYPE to set up data transmission method.

④ Press on the AP SSID entry window to enter SSID. When SSID is not known, press SCAN button on the right to select from available AP SSID.



[WiFi AP Scan Result Screen]

⑤ Press on the AP PASSWORD entry window to enter password. Press VERIFY button on the right to confirm the password. Password verification takes up less than 10 seconds, and the result will be shown on the screen.



[WiFi AP Password Verification Result Screen]

4. Phoropter Connection Setting for lensmeter



[WIFi Phoropter Connection Setting Screen]

① Convert to User SETUP Mode, and select page 2 on network tab.

② Enter r information for phoropter to connect on each field.

- : Select if phoropter will use the data transmission function.

- 

: Enter a name for the phoropter.

- 

: Enter the IP address of the phoropter. (Refer to 2.)

If there are more than five phoropters to enter, additional phoropters can be entered under page3. Maximum 10 of phoropters can be registered. Up to four phoropters can be selected to use the transmission function concurrently

9.9.2. Check WiFi Network Status

Current WiFi network status can be checked through the icons on the upper right of the screen.

(1) : Connected to AP normally.

(2) : Not connected to AP.

(3) : AP connection process is in progress.

(4) : Connected to all selected phoropters normally.

(5) : Connection failure to one or more selected phoropters.

(6) : Phoropter connection process is in progress.

For user convenience, the machine will operate to make attempts to connect to AP automatically while the power is on if it is not connected to AP. Thus, user does not have to go through the AP connection process.

Also, the machine is set to make attempts to connect to all selected phoropters one by one automatically after connecting to AP.

If there is a phoropter connection failure after automated connection attempt or if there is a connection error during operation, lensmeter will try connection every 5 seconds.

⚠ CAUTION

When the distance with the wireless AP is far, or if there is an obstacle between AP and this device, access may be unstable.
Increasingly effective communication is enabled when the AP is installed additionally at a near place or when the AP is moved to a closer place.

Lorsque la distance avec le point d'accès sans fil est éloignée ou s'il y a un obstacle entre le point d'accès et cet appareil, l'accès peut être instable.
Une communication de plus en plus efficace est activée lorsque l'AP est installé en plus à un endroit proche ou lorsque l'AP est déplacé vers un endroit plus proche.

⚠ CAUTION

When the upper network's DHCP function is used due to the nature of the AP's DHCP movement, AP's IP re-allocation movement may result, and thus network connection may be unstable during random period.

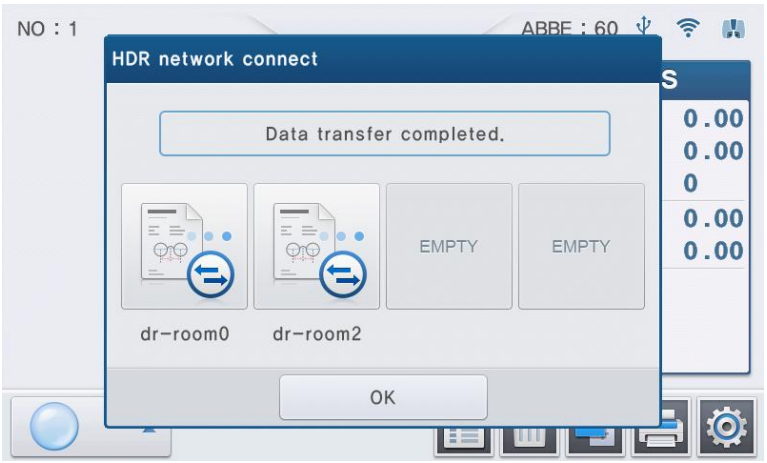
Lorsque la fonction DHCP du réseau supérieur est utilisée en raison de la nature du mouvement DHCP du point d'accès, le mouvement de réallocation IP du point d'accès peut en résulter et la connexion réseau peut donc être instable pendant une période aléatoire.

9.9.3. Measurement Data Transmission

After measuring lens data, the data can be transmitted to a phoropter through WiFi by pressing Print button on the front. Operations can vary depending on the TRANSFER TYPE set on the User SETUP.

1. If it was set to AUTO

The data will be transmitted to all phoropters selected currently. After transmission, status screen (Refer to 9.9.2) will appear, and user can confirm the transmission result through the graphical indications of phoropters (Refer to 9.9.2).



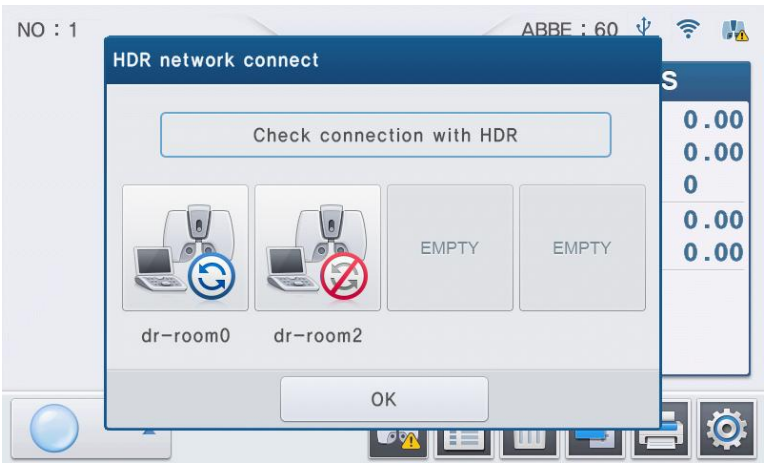
[Transmission Complete on AUTO Mode]

After confirming the result, press OK to turn off the status screen.

If there are connection errors on one or more phoropters, the setting will be converted to MANUAL without transmitting the data.

2. If it was set to MANUAL

The data will not be transmitted immediately, and current phoropter connection status screen will appear.



[Current Phoropter Connection Status Screen on MANUAL Mode]

Status of each phoropter will be shown graphically on the four windows. Under the windows are the names of phoropters set by user. Graphic indications are described below.

(1)  : Connected to phoropter normally.

(2)  : Not connected to phoropter.

(3)  : Data transmission is complete. (At times of data transmission)

(4)  : Data transmission was unsuccessful. (At times of data transmission)

(5) 

: There is not a phoropter selected.

Transmit data to a phoropter of user's choice by pressing on the phoropter window. If the phoropter is not connected, try to reconnect by pressing the window as shown in 9.9.2. After connecting to the phoropter, press on the window once again to transmit the data.

After completing the data transmission to the phoropter of user's choice, turn off the status screen by pressing OK button.

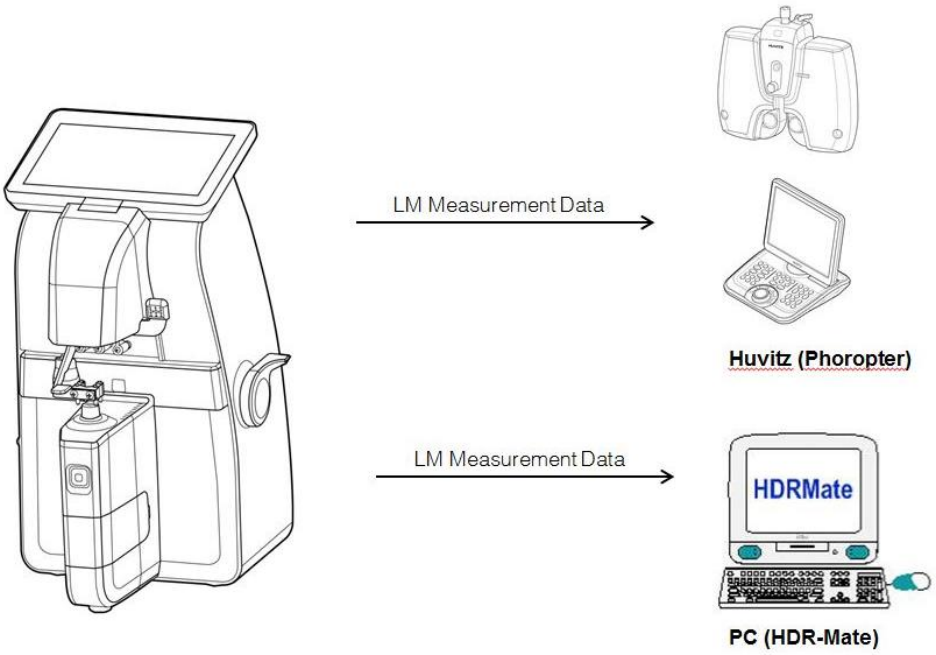
9.10. Measurement Data Transmission using Serial

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

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

9.10.1. Connection

1. HLM -> Connection using RS232 serial cable -> HDR (phoropter)
2. HLM -> Connection using RS232 serial cable(HLM) and USB gender(PC) -> HDR (phoropter)



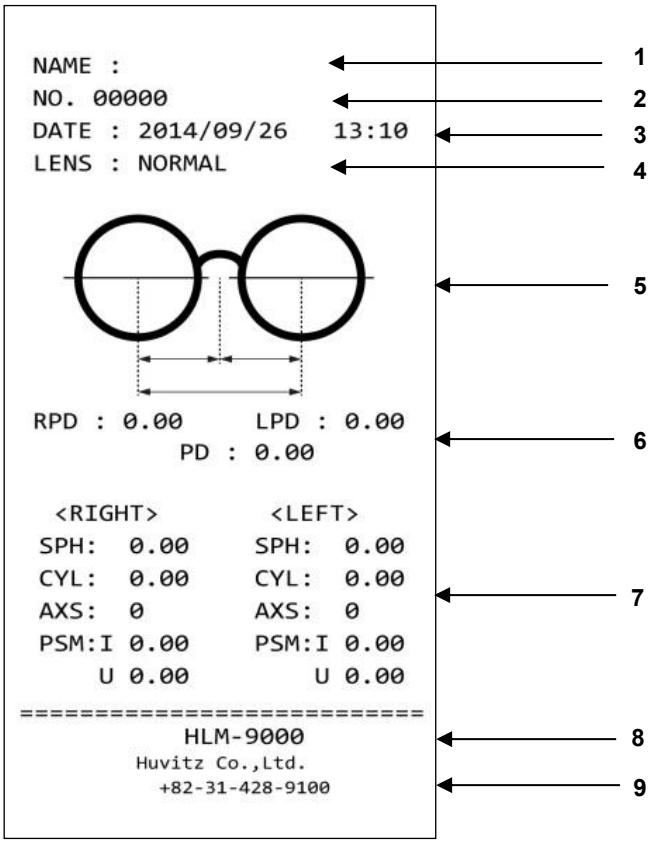
9.10.2. Operating procedure

After measurement, you can press 6 key to operate as follows.

1. If print setting is on, print is performed. Then transmit data to connected device by selected protocol.
2. If print setting is off, transmit data to connected device by selected protocol.

9.11. Print Format

Print format is as the below.



[Print format for eyeglass lens]

1. Patient Name
2. Patient Number
3. Date and Time
4. Display the lens type
5. Lens frame display (Axis display): user setup -> PRINT FRAME -> On
6. Displayed RPD, LPD and TOTAL PD.
7. Measurement data display

SPH: Spherical, CYL: Cylinder, AXS: Axis, PSM: Prism (I: In, O: Out, U: Up, D: Down)

(In the case of Progressive, Bifocal, Trifocal) Display the ADD1, ADD2.

8. Model name
9. Name 1, Name 2: Display the set value. (user setup-> NAME)

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.

2. Message during measurement

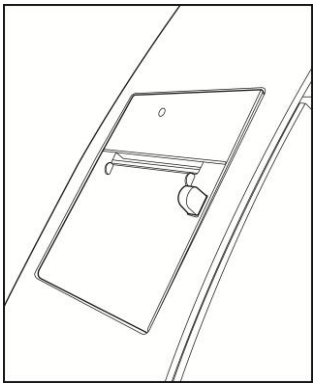
Message	Root causes	Measures
Measuring Error	Indicates when the signal of the measurement is poor. - Is displayed when there is no signal. - Is displayed when there is out of range signal. - Contact lens measurement, when signal is bad, appear.	Clean the lens cap or pinholes, and be measured again.

3. Message when printing

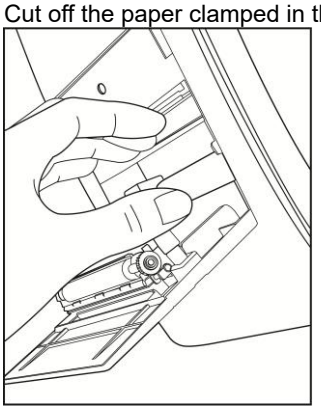
Message	Root causes	Measures
Data Transmitting…	State for transmitting data.	Wait until the data transfer is complete.

10.2. Printing Paper Replacement

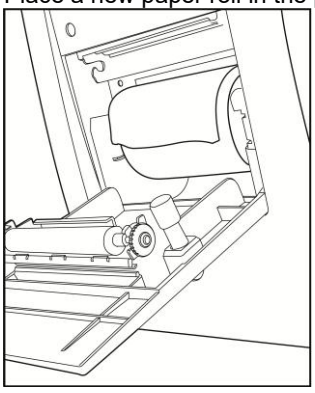
1. Press the button on the side to open the cover.



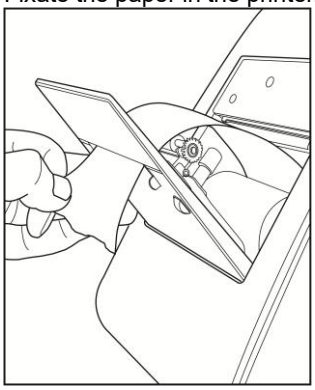
2. Cut off the paper clamped in the paper, and take out the paper roll.



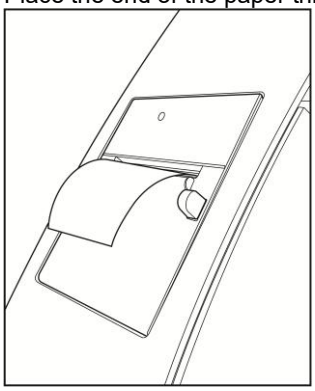
3. Place a new paper roll in the printer case.



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.

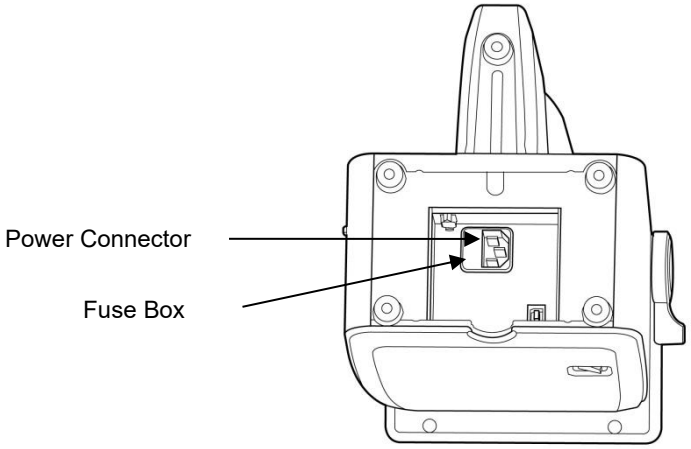


NOTE

Recommend using the printing paper provided by Huvitz.
If you use the similar products, it may cause malfunction and broken.

※ Replacement Part Name, Code and Spec.
→ Printer Paper / 9010A000001-A / Width 57mm, Diameter 50mm, Length 33M

10.3. Fuse Replacement



[Fuse replacement]

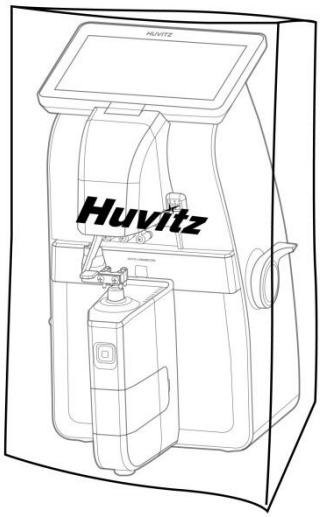
1. Pull the fuse box to remove.
2. Replace with a new fuse.
3. Place the new fuse box in the fuse location.

INFORMATION

Auto Lensmeter HLM-9000 uses a 250V, T3.15AL fuse.

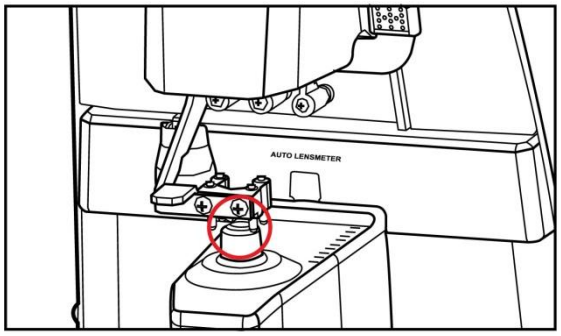
10.4. Storage

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].



[For long-term storage]

10.5. Disposal

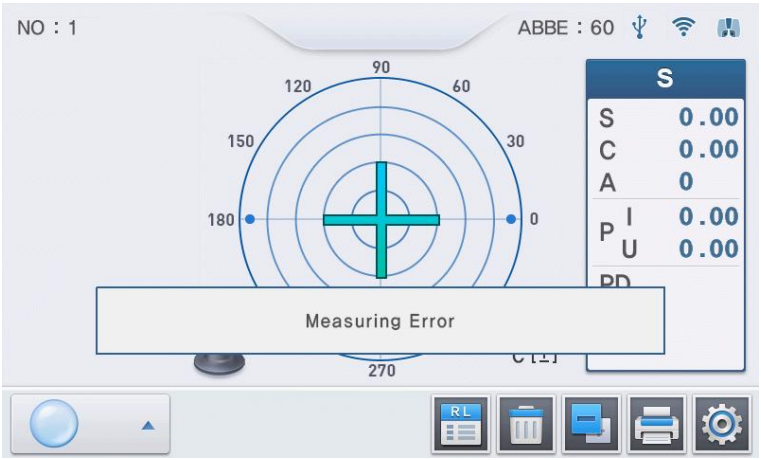
NOTE

Please obey the law relating to the equipment and its part to discard the equipment or its part(s). For example, discarding a lithium battery is a threat to the environment.

When discarding packaged part(s), disassemble the part(s) and obey the law and recycling regulations.

10.6. Various Messages

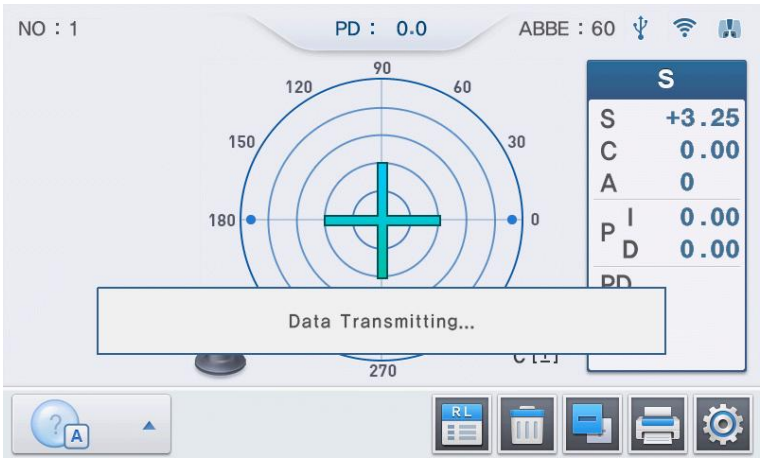
Message box shows information when you are measuring or this instrument is out of order.



[Measuring Error screen]

Measuring Error:

- Is displayed when there is no signal.
- Is displayed when there is out of range signal.
- Contact lens measurement, when signal is bad, appear.



[Data Transmitting screen]

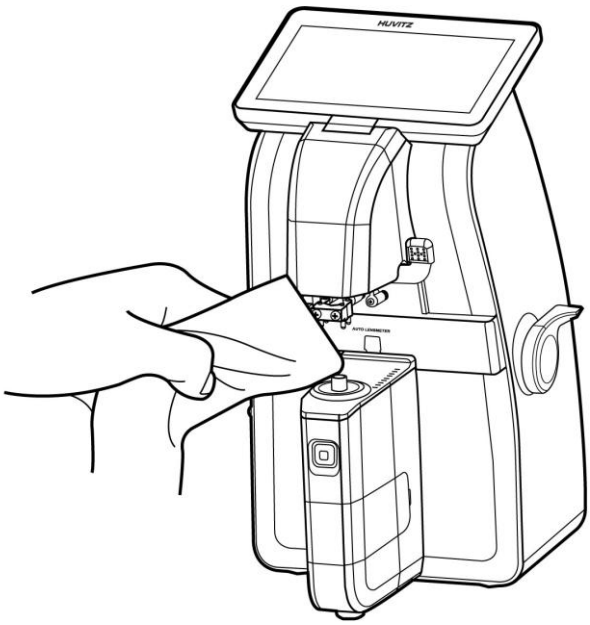
Data Transmitting…:

- Shows a state in which the data transmission.

  (If you set the setup mode COMMUNICATION->RS 232C->LMTORK)

10.7. 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 sown in [Picture: How to clean the pinhole]. Do not use liquid such as alcohol or acetone.



[How to clean the pinhole]

⚠ CAUTION

Do not use liquid such as alcohol or acetone as it can dissolve the adhesive on the pinhole.

N'utilisez pas de liquide tel que de l'alcool ou de l'acétone car cela peut dissoudre l'adhésif sur le trou d'épingle.

If the S, C and A values are not 0 after cleaning the pinhole, please inquire with an authorized dealer or Huvitz Service Department.

11

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)
PD Measurement	0 mm ~ 84 mm
Applicable Lens size	Φ20 mm ~ Φ120 mm

- **Wireless I/F**

Protocol	IEEE802.11b 2.4GHz WiFi
Security mode	WPA2-PSK
IP configuration	DHCP mode

- **The others**

Measurement mode	General, Progressive, Auto Detect, Contact, UV/BLUE
Cylinder	±, + , -
Prism	Rectangular / Pole / Displacement
LED wavelength	545 nm (Green) 395 nm (UV) 420 nm / 450 nm (BLUE)
Contact Lens	Hard/Soft Contact Lens
Abbe value	Manual Revision
Wave	e-Line, d-Line
Screen	85° Tiltable 7”Color LCD IPS Panel (800*480) Touch panel
Printer	Auto cutting Thermal Printer Printer paper (Width 57mm, Diameter 50mm, Length 33M)
Interface	RS-232, WiFi (For communication with HDR-9000), USB 2.0 (One port : For service)
Communication Speed (BPS)	9600,19200,38400,57600,115200 bps
Product Size	222(W) x 240(D) x 370(H) mm
Product Weight	5.4Kg
Power Supply	AC 100 - 240 V ~, 50/60Hz, 0.5-0.3A

- **Measurement Precision**

Sphere and cylinder refractive power	Measuring Range		Precision
	< 0D ≥ −5D	> 0D ≤ +5D	±0.06
	< −5D ≥ −10D	> +5D ≤ +10D	±0.09
	< −10D ≥ −15D	> +10D ≤ +15D	±0.12
	< −15D ≥ −20D	> +15D ≤ +20D	±0.18
	< −20D	> +20D	±0.25
Prism value	Measuring Range		Precision
	> 0Δ ≤ 5Δ		0.25
	> 5Δ ≤ 10Δ		0.25
	> 10Δ ≤ 15Δ		0.50
	> 15Δ ≤ 20Δ		0.75
	> 20Δ		1.00
Pupil distance	± 0.5 mm		
Transmission measurement	± 5%		

- **Environmental conditions**

Operating	Temperature: 10℃ to 35℃ (50°F ~ 95°F) Relative humidity : 30% to 90% (with non-condensing) Atmospheric pressure : 800hpa to 1060hpa
Storage	Temperature: -10℃ to +55℃ (14°F ~ 131°F) Relative humidity : 10% to 95% Atmospheric pressure : 500hpa to 1060hpa
Transportation(with packaging)	Temperature: -40℃ to +70℃ (-40°F ~ 158°F) Relative humidity : 10% to 95% Atmospheric pressure : 500hpa to 1060hpa

12

EMC Information

Manufacturer announcement – electromagnetic waves trouble

Electromagnetic waves trouble		
HLM-9000 should be used in the below mentioned electromagnetic wave environment. HLM-9000 purchaser or user needs to confirm whether HLM-9000 is used in this type of environment.		
Trouble test	**Question of appropriateness**	**Electromagnetic wave environment - guideline**
RF emissions CISPR 11	Group 1	The HLM-9000 uses RF energy only for its internal functions. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The HLM-9000 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply grid that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker IEC 61000-3-3	Complies	

Manufacturer announcement – electromagnetic waves tolerance

electromagnetic waves tolerance			
HLM-9000 is to be used in the below designated electromagnetic wave environment. HLM-9000 customer and user need to guarantee that the HLM-9000 will be used in this type of environment.			
Tolerance test	**IEC 60601 test level**	**Appropriateness level**	**Electromagnetic wave environment - guideline**
Electrostatic discharge(ESD) IEC 61000 - 4 - 2	contact ±8 kV in the air ±15 kV	Note1)* contact ±8 kV in the air ±15 kV	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electric rapid transients/bust IEC 61000 - 4 - 4	power supplying line ±2 kV input/output line ±1 kV	power supplying line ±2 kV input/output line ±1 kV	Mains power quality should be that of typical commercial or hospital environments.
Surge IEC 61000 - 4 - 5	between lines ±1 kV between line and grounding ±2 kV	differential mode ±1 kV common mode ±2 kV	Mains power quality should be that of typical commercial or hospital environments.
Voltage dip, instantaneous interruption, voltage fluctuation at the power input line IEC 61000 - 4 - 11	For 0.5 cycle < 5 %*U*T(*UT's* > 95 % decrease) For 5 cycle 40 %*U*T(*UT's* 60 % decrease) For 25 cycle 70 %*U*T(*UT's* 30 % decrease) For 5 seconds < 5 % *U*T(*UT's* > 95 % decrease)	For 0.5 cycle < 5 %*U*T(*UT's* > 95 % decrease) For 5 cycle, 40 % *U*T(*UT's* 60 % decrease) For 25 cycle, 70 %*U*T(*UT's* 30 % decrease) For 5 seconds, < 5 % *U*T(*UT's* > 95 % decrease)	Mains power quality should be that of typical commercial or hospital environments. If the user of the HLM-9000 requires continued operation during power mains interruptions, it is recommended that the HLM-9000 be powered from an uninterruptible power supply or a battery.
Power frequency magnetic field (50/60 Hz) IEC 61000 - 4 - 8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Other *U*T is the a.c. power voltage for before approving the test level. Note1)* ESD Test will be conducted with screw, lever, signal ports, enclosure, display, measurement button and power switch including VCP/HCP as criteria 'A'. But, criteria of connecting external monitor will be applied 'B' because flickering phenomenon of connecting external monitor during interference of electrostatic discharge doesn't affect essential requirement.			

Electromagnetic waves tolerance			
HLM-9000 is to be used in the below mentioned electromagnetic wave environment. HLM-9000 purchaser or user needs to confirm whether HLM-9000 is sued at this environment.			
Tolerance test	**IEC 60601 test conditions**	**Appropriatenes s level**	**Electromagnetic wave environment - guideline**
Conductivity RF electromagnetic field IEC 61000 - 4 - 6	3 Vrms 150 kHz~80 MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the HLM-9000, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1.2\sqrt{P}$ $d = 1.2\sqrt{P}$ 80 MHz~800 MHz $d = 2.3\sqrt{P}$ 800 MHz~2.5 GHz where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,a should be less than the compliance level in each frequency range.b Interference may occur in the vicinity of equipment marked with the following symbol. 
Radioactivity RF electromagnetic field tolerance IEC 61000 - 4 - 3	3 V/m 80 MHz~2.5 GHz scope	3 V/m	
Note 1: At 80 MHz and 800 MHz, the separation distance of the higher frequency range applies. Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the HLM-9000 is used exceeds the applicable RF compliance level above, the HLM-9000 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the HLM-9000. b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.			

Recommended separation distances between portable and mobile RF communications equipment and the HLM-9000
The HLM-9000 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the HLM-9000 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF

communications equipment (transmitters) and the HLM-9000 as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance suitable for transmitter frequency		
	150 kHz~80 MHz $d = 1.2 \sqrt{P}$	80 kHz~800 MHz $d = 1.2 \sqrt{P}$	800 MHz~2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.
Note 1: At 80 MHz and 800 MHz, the separation distance of the higher frequency range applies.
Note 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Electromagnetic waves tolerance

HLM-9000 is to be used at the electromagnetic wave environment designated below. HLM-9000 customer and user need to guarantee that the HLM-9000 will be used at this environment.

Tolerance test	IEC 60601 testing conditions	Appropriateness level	Electromagnetic wave environment - guideline
Conductivity RF electromagnetic field IEC 61000 - 4 - 6	3 Vrms 150 kHz~80 MHz	3 Vrms 150 kHz~10 MHz	HLM-9000 has minimum RF shield effect. As for each cable that comes into the shielded location, it should be used only at the shielded location; 80 dB at 10 MHz~20 MHz frequency range, frequency range of 100 dB, 80 MHz~100 MHz at 20 MHz~80 MHz frequency range. Minimum value at the 20 MHz that has 80 dB minimum RF filter decrease is 100 dB. Minimum value at 80 MHz is 80 dB.
Radioactivity RF electromagnetic field tolerance IEC 61000 - 4 - 3	3 V/m 80 MHz~2.5 GHz	3 V/m 100 MHz~2.5 GHz	This is fixation RF transmitter that is determined through electromagnetic wave environment field inspection. Electric intensity at the outside of the shielded location should be 3 V/m or less a. Trouble may result near the medical device where the following symbol is indicated.

Other 1 This guideline cannot be applied to all situations because diffusion of electromagnetic waves are affected by absorption and reflection by structure, object and human beings.
Other 2 It is important to verify and to confirm whether actual shield effect and filter decrease of the shielded location satisfy the minimum specs.

It is not easy to carry out precise theoretical forecasting when it comes to the electric intensity that

results from the fixation transmitter such as a wireless phone(vehicle phone/phone with no code)'s base station, land mobile wireless, amateur wireless, AM and FM broadcast, TV broadcast. In order to evaluate the electromagnetic wave environment with fixation RF transmitter, field inspection is required. If the electric intensity used by the HLM-9000 that is measured at the outside of the shielded location exceeds 3 V/m, then it is necessary to observe and verify whether HLM-9000 operates normally. If abnormal operation is observed, then re-place HLM-9000 or use other shielded location that has increasingly higher RF shield effect and filter decrease. Likewise, other additional measures may be needed.

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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: _____

Model Number: _____

Serial Number: _____

If you have trouble contacting the place of purchase, contact the service department at Huvitz directly using the addresses and phone numbers below.