Huvitz

Automatic Perimeter
HVF-100

USER MANUAL

IMPORTANT NOTICE

This product may malfunction due to electromagnetic waves caused by portable personal telephones, trans ceivers, radio-controlled toys, etc. Be sure to avoid having objects such as, which affect this product, brou ght near the product.

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SAFETY PRECAUTIONS

1.1 Overview

Safety is everyone's responsibility. The safe use of this instrument is largely dependent upon the installers, users, operators, and managers. It is prerequisite to read and understand these specifications before installing, using, cleaning, fixing or revising. Fully understanding the whole instructions must be the first priority. For this reason, the following safety notices have been placed appropriately within the text of this manual to highlight safety related information or information requiring special emphasis. All users, operators, and maintainers must be familiar with and pay particular attention to all signs of Warnings and Cautions.

⚠ WARNING

"Warning" indicates the presence of a hazard that could result in severe personal injury, death or substantial property damage if ignored.

"Warning" indique la présence d'un danger qui pourrait entraîner des blessures graves, la mort ou des dommages matériels importants si ignoré.

⚠ CAUTION

"Caution" indicates the presence of a hazard that could result in minor injury, or property damaged if ignored.

"Caution" indique la présence d'un danger pouvant entraîner des blessures légères ou des dommages matériels en cas d'ignorance.

⚠ NOTE

This is used to emphasize essential information.
Be sure to read this information to avoid operating the device incorrectly.

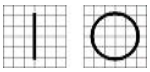
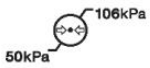
Ceci est utilisé pour souligner les informations essentielles.
Assurez-vous de lire ces informations pour éviter de mal utiliser l'appareil.

2

SAFETY INFORMATION

2.1 Symbol information

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

Symbol	Indication
	This symbol identifies a safety note. Ensure you understand the function of this control b efore 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.)
	I and O on power switch represent ON and OFF respectively. (O sur l'interrupteur d'alimentation représentent respectivement ON et OFF.)
	Temperature Limitation (Limitation de température)
	Atmospheric pressure limitation (Limitation de pression atmosphérique)
	Humidity limitation (Limite d'humidité)
	Stack direction (Direction de la pile)
	Keep DRY (Garder au sec)
	Fragile , handle with care (Fragile, manipuler avec soin)
	Keep away from sunlight (Tenir à l'écart de la lumière du soleil)
	Stack layer limit (Limiter la couche de pile)
	CE Mark (Marque CE)

	Use no hook (N'utilisez aucun crochet)
	WEEE Symbol – EU only 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. 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. (Symbole WEEE- EU seulement 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 oules autorités locales. L'élimination correcte de votre ancient appareil aidera à prévenir les conséquences negatives potentielles sur l'environnement et la santé humaine. Pour plus d'informations sur l'élimination de votre ancient appareil, veuillez contacter votre mairie, le service d'élimination des déchets ou le magasin où vous avez acheté le produit.)
	Authorized representative in the European Community – EU ONLY (Représentant autorisé dans la Communauté européenne- EU seulement)
	Manufacturer (Fabricant)
	Date of manufacture (Il indique l'année de fabrication et le fabricant.)
	Consult instructions for use (Consulter les instructions d'utilisation)
	Type B Isolated patient connection (Type B Connexion patient isolée.)
	QR code (QR code)

	Alternating Current (Courant alternative)
	Consult instructions for use (Consulter les instructions d'utilisation)

2.2 Safety Precautions

1. For your security and benefit, please read the Instruction Manual as well as all the datum of the instrument carefully before using it. If you do not operate the instrument according to the Instruction Manual, Huvitz Co., Ltd. shall not take any responsibility.

2. Use it in a darkroom and it can only be operated by those who have been trained.

3. The voltage must be up to the given standard. If the voltage is not steady, please install a Constant Voltage Regulator. Huvitz Co., Ltd. will not take responsibility for the damage caused by the voltage.

4. Do not use this instrument in the inflammable, hot and dusty environment and pay attention to keep it clean and dry; To avoid being damaged by the environment (Damp, Dusty, Liquid, under the sun and so on).

5. Do not let the liquid or any other small objects run into the instrument, otherwise these objects may make the inner parts of the instrument short-circuit, and even make the users get an electric shock or even cause a fire hazard.

6. If you need restart the instrument, you can open the perimeter after 5 seconds and open the computer after 15 seconds after turning off.

7. Keep a distance of 10 m or more from electrical equipment such as televisions and radios to avoid possible electromagnetic interference.

8. Environmental protection clause: It will pollute the environment if you discard the equipment and the accessories which is breakdown, recall or disposal according to the local laws and regulations.

9. Without the permission, do not open the box of the instrument or we will not take the consequences.

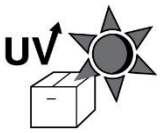
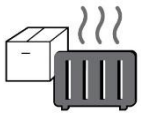
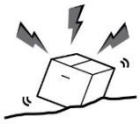
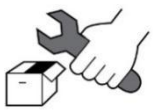
10. Rated operating loaded and safe working load of chin rest is 5kgs.

11. If any serious incident that has occurred in relation to the device, it should be reported to the manufacturer

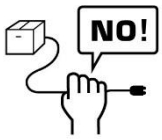
and the competent authority of the Member State in which the user and/or patient is established.

2.3 Environmental Considerations

Avoid the following environments for operation or storage:

	Where the instrument is exposed to water vapor. Don’t operate the instrument with wet hands Indoor use only.
	Where the instrument is exposed to direct sunlight.
	A place where the equipment can be exposed to direct ultraviolet.
	Where there are big changes in temperature. Optimal temperature range for normal operation is from 10°C to 35 °C (Humidity: 30~90%).
	Where there is hot equipment nearby.
	Where the humidity is extremely high or there is a ventilation problem.
	Where the instrument is exposed to excessive shocks or vibrations.
	Where the instrument is exposed to chemical material or explosive gas.
	Be cautious so that things like dust and metal do not fall inside the instrument.
	Don’t disassemble or open the product. HUVITZ does not take responsibility for the possible problems
	Be careful not to block the fan of the instrument.

Don’t plug the AC power cable into the outlet unless all parts of the instrument are completely connected. Otherwise, it will cause severe damage on the instrument.



Pull out the power cable with holding the plug, not the cord.
To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.

This instrument can withstand the following conditions:

1. Operation
- An ambient temperature range of 10℃ ~ 35℃ (50°F ~ 95°F)
- A relative humidity: 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: 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: 10%~95% (with non-condensing)
- An atmosphere pressure range of 760 ~ 1060hpa

Avoid environments where the equipment is exposed to excessive shocks or vibrations.

3

INTRODUCTION

3.1 System Outline

Automatic perimeter HVF-100, adopt the advantage of international advanced models, rear projection working mode, with wide testing range 0-90°; Configured top grade PC system, the whole system has the characteristic of high dependability and steady performance. Support Windows XP, WIN7 and Windows 10 ， artistic software interface, easy operation,, easy to learn and understand. Kinds test program and strategy, standard test report and analysis software, provide auxiliary diagnosis for vision damage related diseases.

Indication for use: A perimeter is an AC-powered or manual device intended to determine the extent of the peripheral visual field of a patient. The device projects light on various points of a curved surface, and the patient indicates whether he or she sees the light.

Structure:

a ）Hardware: It's mainly structure by computer system, perimeter stimulus, printer, and socket

b ）Software: Patient information input module, Image processing modules, Document management modules, output & print module

3.2 Intended Use

A perimeter is an AC-powered or manual device intended to determine the extent of the peripheral visual field of a patient. The device projects light on various points of a curved surface, and the patient indicates whether he or she sees the light.

3.3 Classification

- Classification of product: Class I according to Medical Device Regulation 2017/745
- Classification by electric shock type: AC-powered
- Protection class against electric: Type B(Application Part)
- Classification according to the degree of protection against incoming liquid: Ordinary equipment that is not anti-liquid
- Classification according to the degree of safety when using flammable anesthetic gas mixed with air or flammable anesthetic gas mixed with oxygen or nitrous oxide: Do not use in the case of flammable anesthetic gases mixed with air or flammable anesthetics mixed with oxygen or nitrogen oxides.
- Classification by operating mode: intermittent working form
- Whether the device has the application part of the protection against defibrillation discharge: none

3.4 Applicability

This instrument is used for examining the change of visual field which may be hurt by glaucoma, visual disease, disease of brain surgery and disease of retina.

Targeted Patient Population: Anyone over the age of 18 or under the age of 18 accompanied by a guardian, provided they are in good physical and mental health, also observing the indications and contraindications for using the equipment.

3.5 Patient requirements

The patient who undergoes and examination by this instrument must maintain concentration for a few minutes and adhere to the following instructions;

- After his/her face to the chinrest, forehead rest.
- Cover patient's eye which will not be tested with an eye shroud
- Understand and follow instructions when undergoing an examination.

If the patient does not conform to these conditions, it is not possible to undergo examination.

3.6. Operating Principles

The Perimeter checks the sensitivity of the human eye to light, so as to realize the pathological examination of the optic nerve, retina, visual pathway and other tissues. The external light passes through the refractive system to the retina, forms bioelectricity through the photochemical reaction of the retina, passes to the visual cortex through the visual pathway, and forms vision through comprehensive analysis of the brain. From the distribution and direction of nerve fibers from the retina to the optic cortex, it can be known that any lesions in any part of the visual pathway must be reflected in the visual field. According to the visual field changes and other clinical examination results, the location and nature of the lesion can be analyzed.

3.7 Applied Standard List

- 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

- ISO15004-2: Ophthalmic Instruments-Fundamental requirements and test methods
  - Part 2: Light hazard protection

4

TECHNICAL PARAMETER

4.1 Structure composition

4.1.1Perimeter

a) Perimeter main body

b) software

4.1.2 Software

Patient information input module, Image processing modules, Document management modules, output & print module

4.2 Technical parameter

Parameter \ Model	HVF-100
DB Value Range displayed	0~40db
Stimulus Intensity Range	1asb~10000asb
Stimulus Size	Goldmann III
Stimulus Color	White
Stimulus Duration Time	200ms/ Adaptive
Max Measurement range	90°
Test Distance	30cm
Sphere Size	Radius 300mm
Background Illumination	White 31.5 asb (10cd/m2)
Test Mode	Static
Stimulus quantity	456 points
Stimulus Plane	Aspherical surface
Stimulus Source	LED
Chinrest Control	Touch Screen, Keyboard and mouse control, Button control
Head Movement	Chinrest and forehead-rest move simultaneously
PC Configuration	CPU:1.6 GHz; RAM: 4 GB; Hard disk: 120 GB;
	Operation system: Windows 10;

			LCD:14 " Capacitive Touch screen;
			Networking: Ethernet & WIFI;
Software Function	Test Programs	Threshold Test Programs	10-2, 24-2, 30-2, 60-4, Macular, Nasal Step
		Screening Test Programs	C-40, C-76, P-60, Nasal Step, FF-81, FF-120, FF-135
		Special Test Programs	Esterman Monocular, Esterman Binocular, Superior 36, Horizontal View Angle Check, Driver Test, Blind Zone Test, Driver Quick Test
	Test Strategy	Threshold Strategy	Full Threshold, Smart Interactive(SIN), Fast Smart Interactive(Fast SIN)
		Screening Strategy	Zone 2, Zone 3, Quantify Defects
		Strategy Mode of Screening	Age Related, Threshold Related, Single Stimulus
	Analyze Function		Single Field Analysis, Multi Field Analysis, Reliability Analysis, GPA(Glaucoma Progression Analysis), GHT(Glaucoma Hemifield Test), VFI Index
	Fixation Monitoring		Heijl/Krakau Blind Spot Monitor, Video Eye Monitor, System Alarm, Head Tracking, Gaze Tracking, Auto Eye Position Calibration
	DICOM Support		●
	Voice Guidance function		●
	Fixation Deviation Alarm		●
	Customize test program		●
	Auto OD/OS recognition		●
Dimension			480mm(L)*430mm(W)*528mm(H), 14kgs
Packaging			560mm(L)*500mm(W)*670mm(H), 21kgs
Others			Power consumption: 200VA Input Voltage: AC 100 - 240V,50 ~ 60Hz

4.3Technical Index

4.3.1 Normal working conditions

4.3.1.1 Ambient temperature range: 10℃～35 ℃

4.3.1.2 Relative humidity range : 30% ～ 90%.

4.3.1.3 Atmospheric pressure range : 800hPa～1060 hPa.

4.3.1.4 Power supply conditions : a.c.100~240V, 50/60 Hz

4.3.1.5 Other conditions: no dust, no vibration, no strong electromagnetic field interference.

4.3.2Stimulus meets the requirement list in table 1

Table 1 Stimulus parameter

S/N	Contents	Allowance	
1	Background light , L_B	+25% , -20%	
2	Contrast , $\triangle L/ L_B$	White background light, white stim ulus	+25% , -20%
3	Stimulus location	0°～10° : ≤0.5°	
		10°～30° : ≤1°	
		> 30° : ≤2°	
4	Stimulus size	Conversion to solid angle : +20% , -15%	
5	Stimulus duration	200ms～500msadjustable , ±20%	
6	Test range	Most peripheral stimulation points are not more than 2° outside the bo	
7	Stimulus shape	Check table 2	

4.3.3Travel distance of chinrest and headrest

Left-Right ≥30 mm , Upper-Down ≥50 mm.

4.3.4 Minimum test stimulus point centrifugal angle and minimum number of stimulus positions

a） Minimum test stimulus point centrifugal angle meets requirement in table 2

Table 2

Content	Minimum test stimulus point centrifugal angle Φ
Nasal step	45°
Bitamporal	70°
Upper part	45°
Downward	60°

b) Minimum number of stimulus positions meets requirement in table 3

Table 3

Centrifugal Angle Φ	Minimum number of stimulus positions

0° ~ 25°	60
> 25° ~ 50°	30
> 50° ~ 70°	15
Total	105

4.3.5 Stimulus parameter

Table 4-1 Stimulus contrast ratio (White stimulus-White background)

Apply to HVF-100

dB	Stimulus Intensity $L_s - L_B$ $\mathbf{cd/m^2}$	Luminance L_s $\mathbf{cd/m^2}$	Contrast $(\mathbf{L_s - L_B})/\boldsymbol{L_B}$
5	1007	1017	100.7
6	800	810	80
7	635	645	63.5
8	505	515	50.5
9	401	411	40.1
10	318.5	328.5	31.85
11	253	263	25.3
12	201	211	20.1
13	159.6	169.6	15.96
14	126.8	136.8	12.68
15	100.7	110.7	10.07
16	80	90	8
17	63.5	73.5	6.35
18	50.5	60.5	5.05
19	40.1	50.1	4.01
20	31.85	41.85	3.185
21	25.3	35.3	2.53
22	20.1	30.1	2.01
23	16	26	1.6
24	12.7	22.7	1.27
25	10	20	1

26	8	18	0.8
27	6.4	16.4	0.64
28	5	15	0.5
29	4	14	0.4
30	3.19	13.19	0.319
31	2.5	12.5	0.25
32	2	12	0.2
33	1.6	11.6	0.16
34	1.27	11.27	0.127
35	1	11	0.1

4.3.6 Stimulus Size Parameter

Azimuth θ	Centrifugal angle Φ	b/a	Solid angle Ω
4°	15°	>0.7	6.66E-05
0°	40°	>0.6	8.00E-05
45°	13°	>0.7	7.00E-05
	40°	>0.5	7.00E-05
72°	3°	>0.8	7.80E-05
90°	13°	>0.7	8.44E-05
	40°	>0.6	7.50E-05
135°	13°	>0.7	6.60E-05
	40°	>0.6	7.50E-05
176°	15°	>0.7	7.20E-05
175°	40°	>0.6	6.00E-05
225°	13°	>0.7	6.50E-05
	40°	>0.6	7.09E-05
281°	13°	>0.7	9.30E-05
280°	40°	>0.6	6.20E-05
315°	20°	>0.7	6.50E-05
	40°	>0.6	6.20E-05

4.3.7 Trial location and stimulus value

Azimuthθ	Centrifugal angle Φ	Stimulus brightness
4°	15°&40°	10 dB&20 dB
45°	13°&42°	10 dB&20 dB
72°	3°	5 dB～20 dB , Per every 5 dB
		22 dB～30 dB , Per every2 dB

		31 dB ~ 0.1L_B (Measure with background equal to zero) , Per every 1dB
78°	15°	10 dB&20 dB
90°	45°	
135°	13°&42°	10 dB&20 dB
176°	15°&40°	10 dB&20 dB
225°	13°&42°	10 dB&20 dB
270°	15°	10 dB&20 dB
278°	42°	
315°	13°&42°	10 dB&20 dB

5

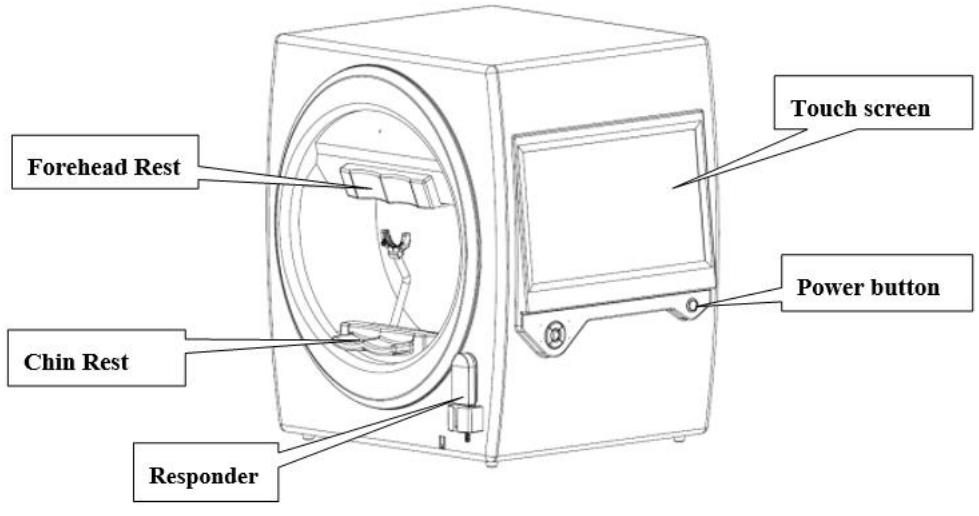
Installation Procedure

5.1 Hardware

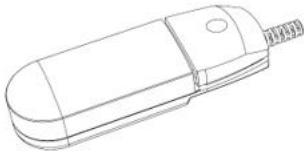
HVF-100 has already been inspected and tested before leaving factory.

Please check if all accessories listed on list provided or not, any question, please contact with seller immediate ly.

Main parts : Perimeter main body, Responder, Keyboard and mouse and power supply.



Power supply



Responder

Packing List:

Parts Name	Quantity
Perimeter Main Body	1 Unit
Responder	1 Pcs
Power Supply Cable	1 Pcs
Wireless keyboard and Mouse (Without battery)	1 Set
Eye Patch	1 Pcs
Dust Cover	1 Pcs
USB flash disk (Include E-copy Instruction Manual & backup perimeter software data)	1 Pcs

We promise to provide users with related materials such as circuit diagrams, component lists, etc., necessary for users to repair this product.

5.2 service environment

Ambient temperature range: 10C° ~ 35 C°

Relative humidity range : 30% ~90%

Atmospheric pressure range : 800hPa ~ 1060 hPa

Power supply conditions : : a.c.100~240V, 50/60 Hz

Input power: 200VA

5.3 Installation environment

(1) The equipment must be installed in the flat ground with no slope.

(2) The equipment must be installed in the clean, quiet and dry room.

(3) The equipment must be installed in a dark room with an illumination not greater than 30 lx from 1 meter a way.

(4) The instrument must be installed with special ground wire.

5.4 Hardware Setup

(1) Take out the perimeter and place on table, insert and connect the responder.

(2) Connect the power of the perimeter.

The equipment is an all-in-one instrument. The hardware and software installation and usage methods are synch ronized with this manual. Please connect the USB interface to the electrophoresis memory.

5.5 Software instruction, installation and uninstall

5.5.1Software Name: Automatic Perimeter System

5.5.2 Software application backup

After the software collects images, the image data needs to be backed up. All the image data are stored in the software installation folder, just back up the entire installation folder.

Note: The system software must be installed in the "D:\ perimeter" directory.

5.5.3 Software maintenance

After the software configuration is completed, there is basically no need for maintenance. When ther e is new software that needs to be upgraded, just reinstall the new software; viruses, serious mis-o perations or hardware system failures may damage the software system of the device. If the softwa re system is severely damaged, please follow the steps below to reinstall the software system:

To install the operating system on the computer, we recommend using Windows XP (32-bit), Windo ws 7 (32-bit) and above. If the Operation System software drivers are not automatically recognized during the installation process after the operating system is installed, you can install their drivers m anually. These drivers are located in the factory files on the D drive of the computer. Install the 28 60 video capture driver, the driver is located in the 2860 capture card driver directory in the D disk factory file.

5.5.4 Software installation

Win7 installation procedure : in 2860 capture card driver directory under Disk D 

, dou ble click 

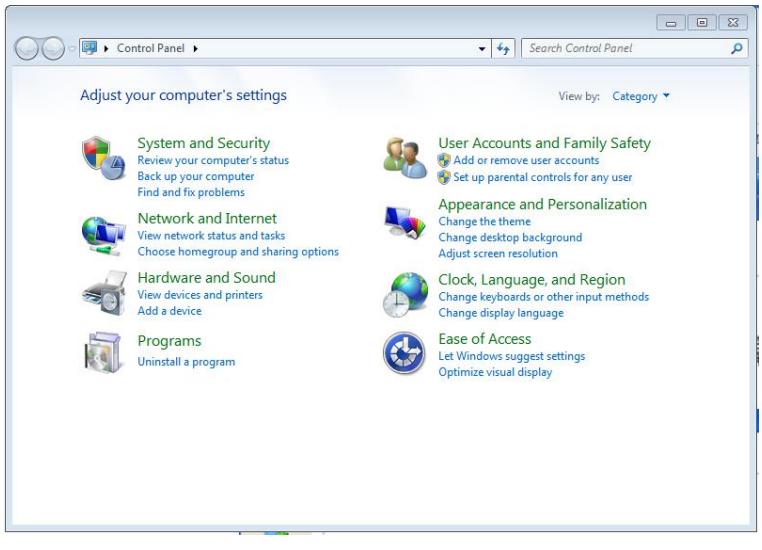
, Just follow the default operation.

If you need install perimeter software, it default locate at D:\ perimeter ; Just follow the default operation.

5.5.5 Software uninstall

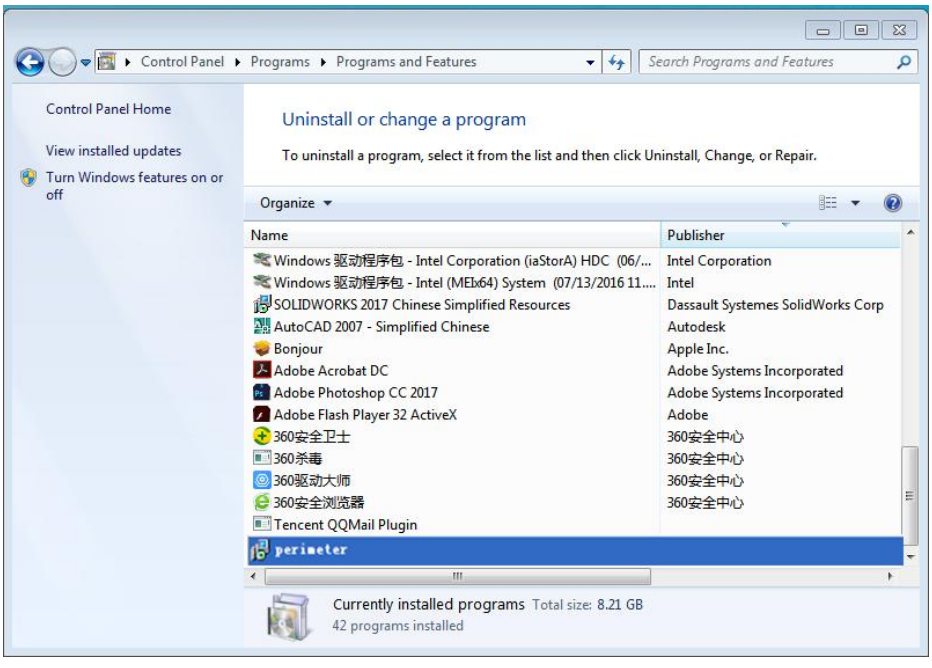
1.Click START Menu, choose [Control Panel] like below

2. Select uninstall a program



3. Select perimeter software 

and choose delete



Follow the system procedure to finish the Uninstall procedure.

Note: Perimeter software installation and uninstall procedure may differ according to Windows System, please operate accordingly.

5.5.6 Software operating environment description

1. Hardware configuration requirements

Requirements	Detail
Hardware minimum requirements	● CPU : 1.6 GHz and upper ● RAM : 4GB and upper ● Hard Disk : 120 GB and upper ● 14 inches displayer , Resolution ≥ 1366×768

2. Software Environment Requirements

- The software requires at least Windows 7 32-bit and above, supporting software: delphi 7.
- Security software: Windows Defender.
- Application software: none.
- Security Software Update Requirements: None.

5.5.7 Chin-rest safety factor

Chin-rest rated load: 5kg;
Chin-rest safe load: 10 kg;
Chin-rest breaking load: > 30 kg;
Chin-rest safety factor: breaking load/rated load>30 kg/5 kg=6

6

Software Function

6.1 Software function

(1) Visual Checking

The main functions of this module are for: visual checking, statistic analysis of the checking re sult, storing the data and printing

(2)File Management

The main functions are: file searching, report comparison and printing, document deleting

(3)Voice Guidance

Perimeter software with Voice Guidance function, can indicate patient on how to cooperate with the visual field test and encourage them during test.

6.2 Start and close software

（1）Start：Double click the desktop icon 

， software will be start

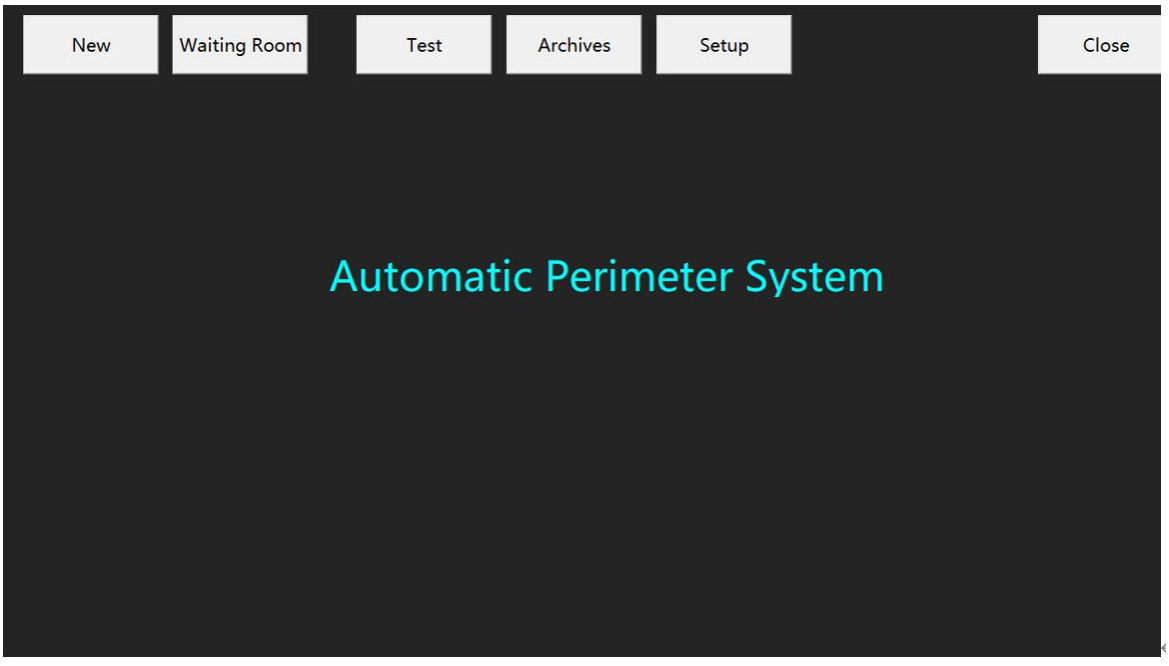
（ 2 ）Close：Click the icon at left-upper software, s 

ill be closed.

6.3 Introduction of Operation System

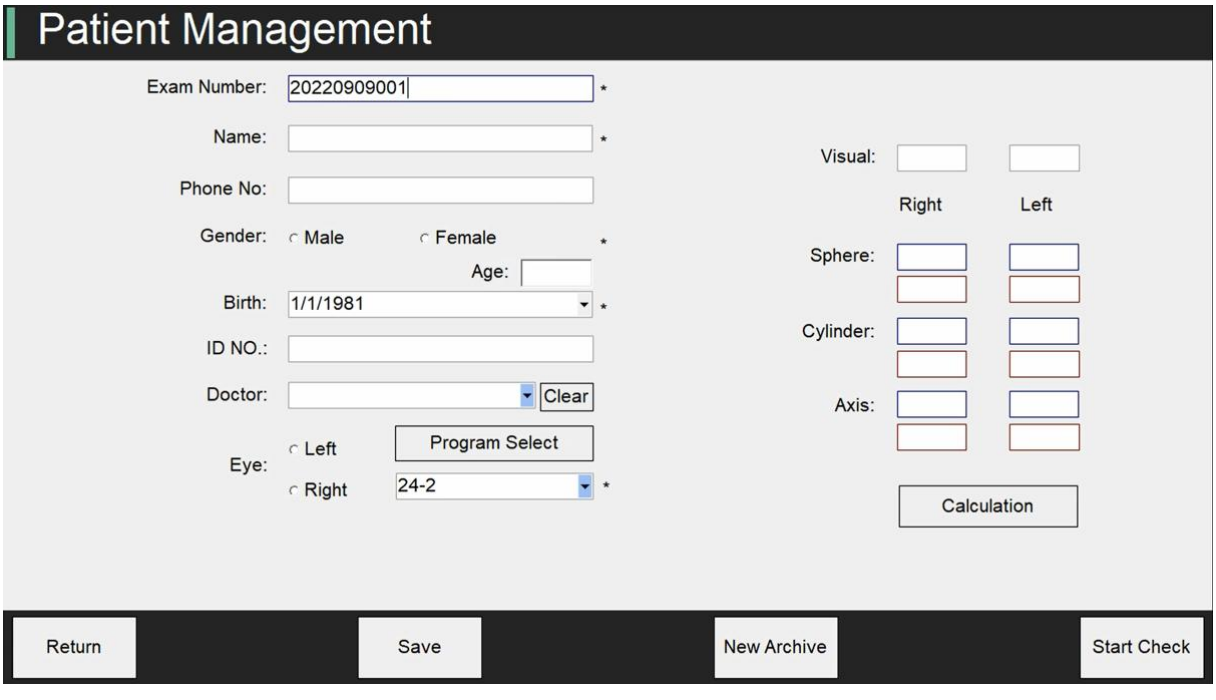
There are 6 interface of software which are Main Interface, Register Interface [New], Waiting Ro om, Examination Interface, Records Interface [Archive] and Setup interface.

Home Interface: Operation interface for register new patient information, Waiting Room, Test inte rface, Records Interface [Archive] and Setup interface. Image as followed:



Home interface

Register Interface [New] is used for register patient information and select test program. As follow:

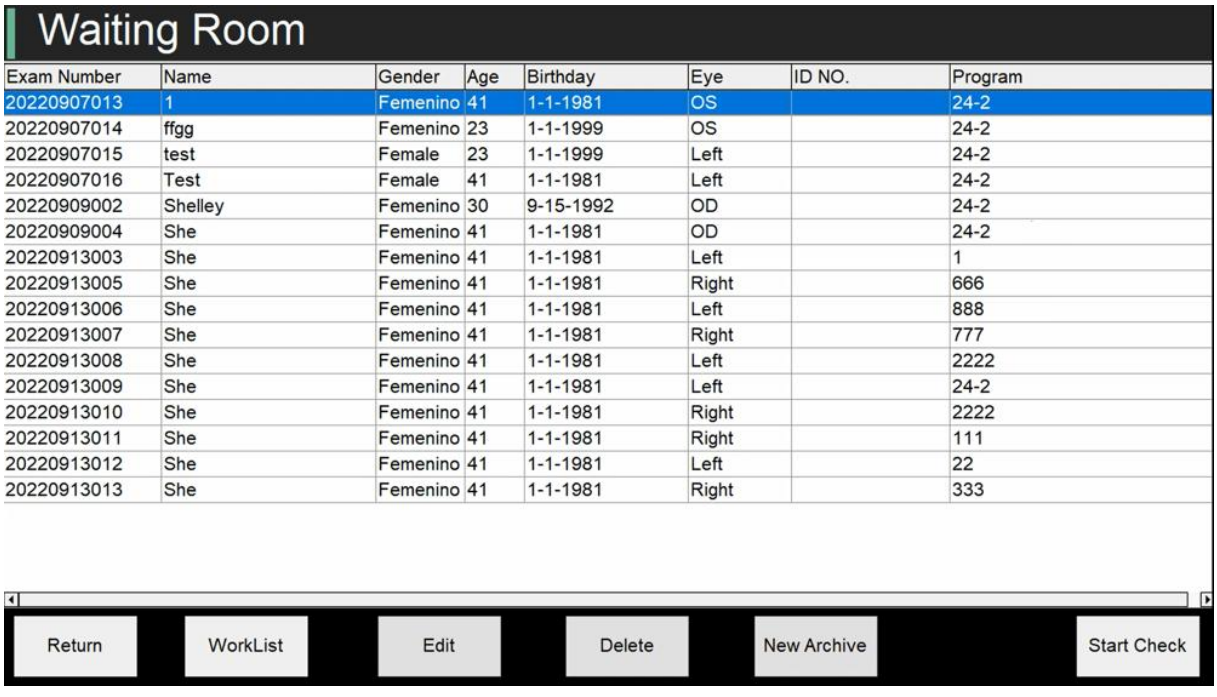


Register Interface

Note:

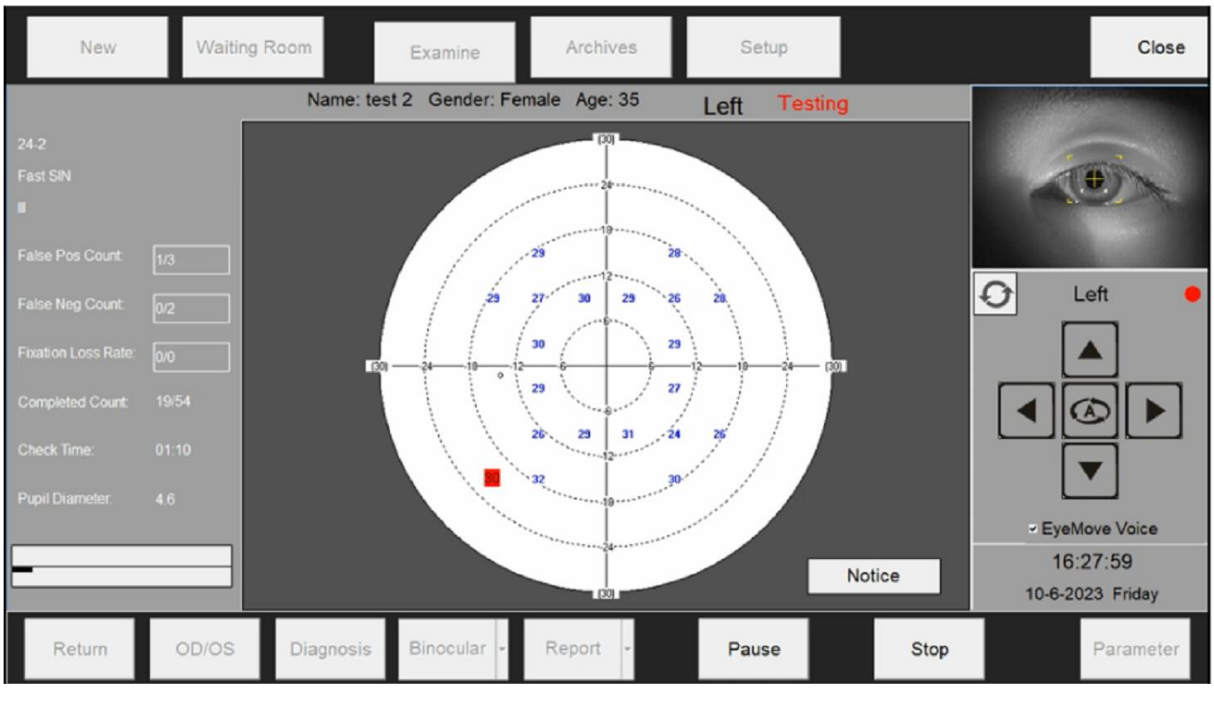
Correction lens calculation is a age related formula. Calculate it after input patient age correctly.

Waiting Room Interface is used for patient information management, edit, delete, register for waiting and start test, as follow:



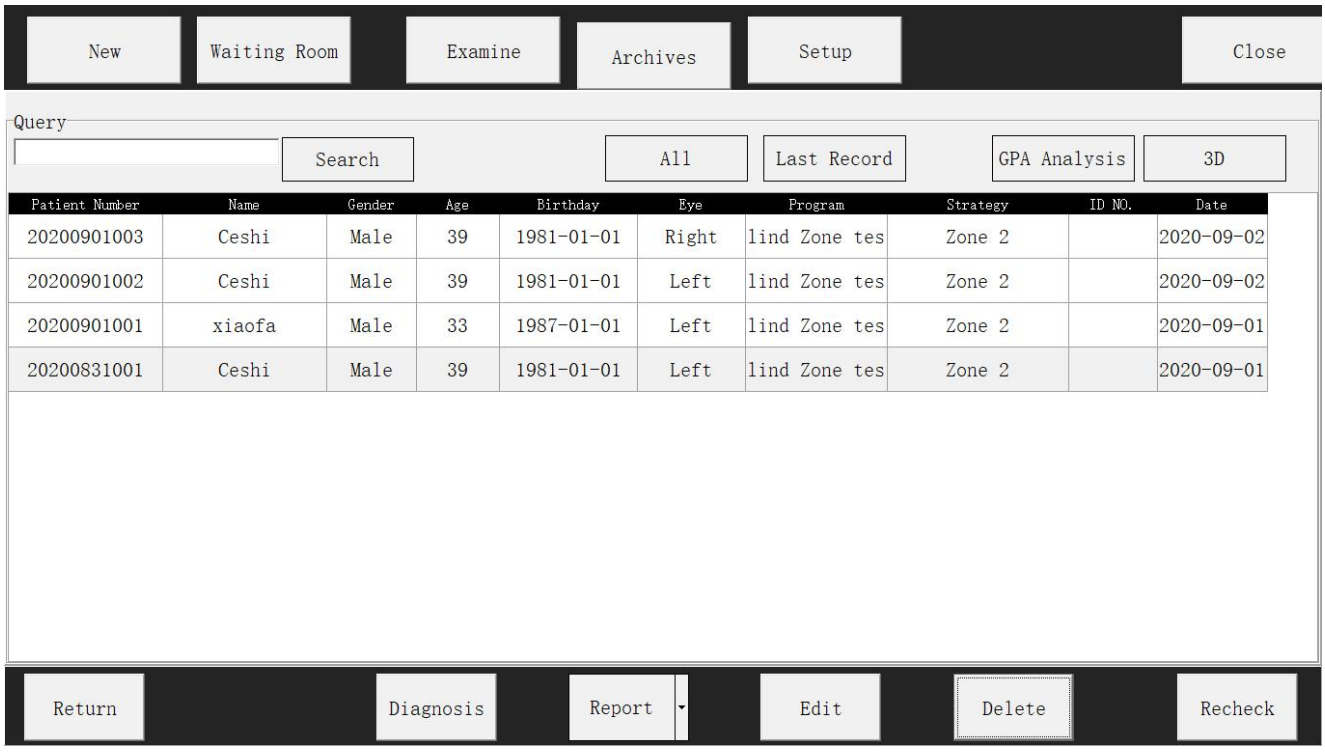
Waiting Room Interface

Examination Interface is used for program selection before exam, and proceed visual field test. As follow:



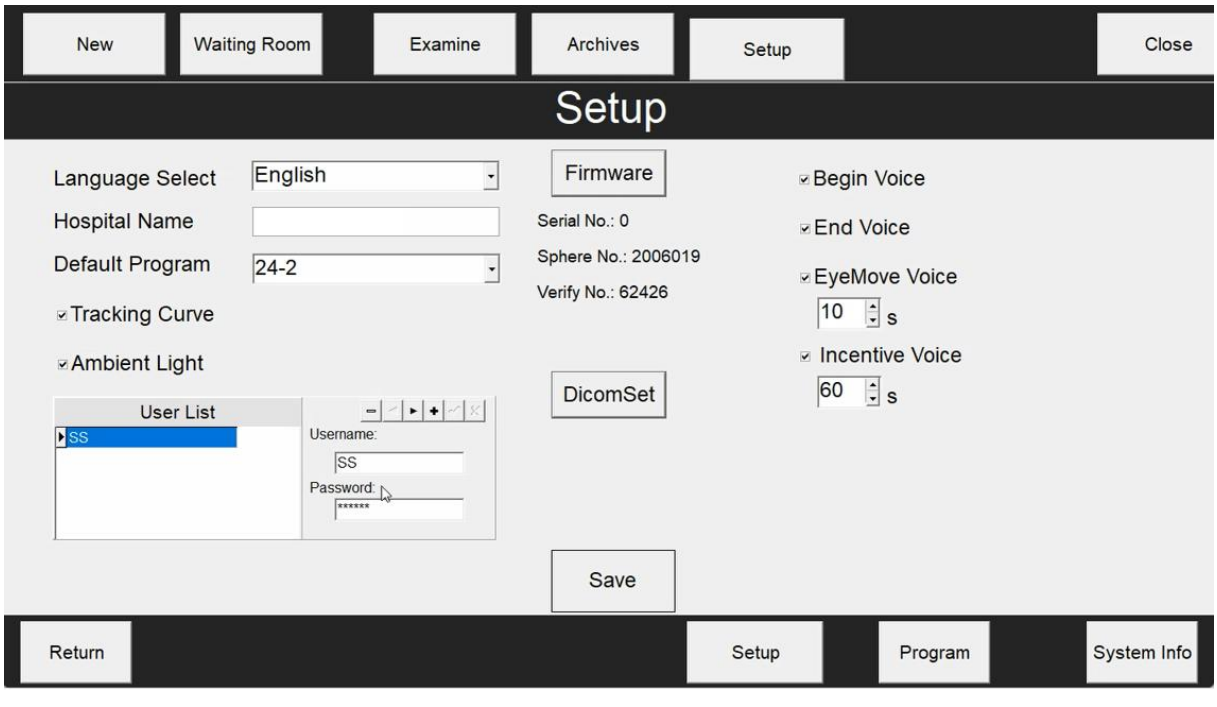
Examination Interface

Archives Interface is used for patient history data management, include search, recheck, edit, delet e, check report and diagnosis. As Follow:

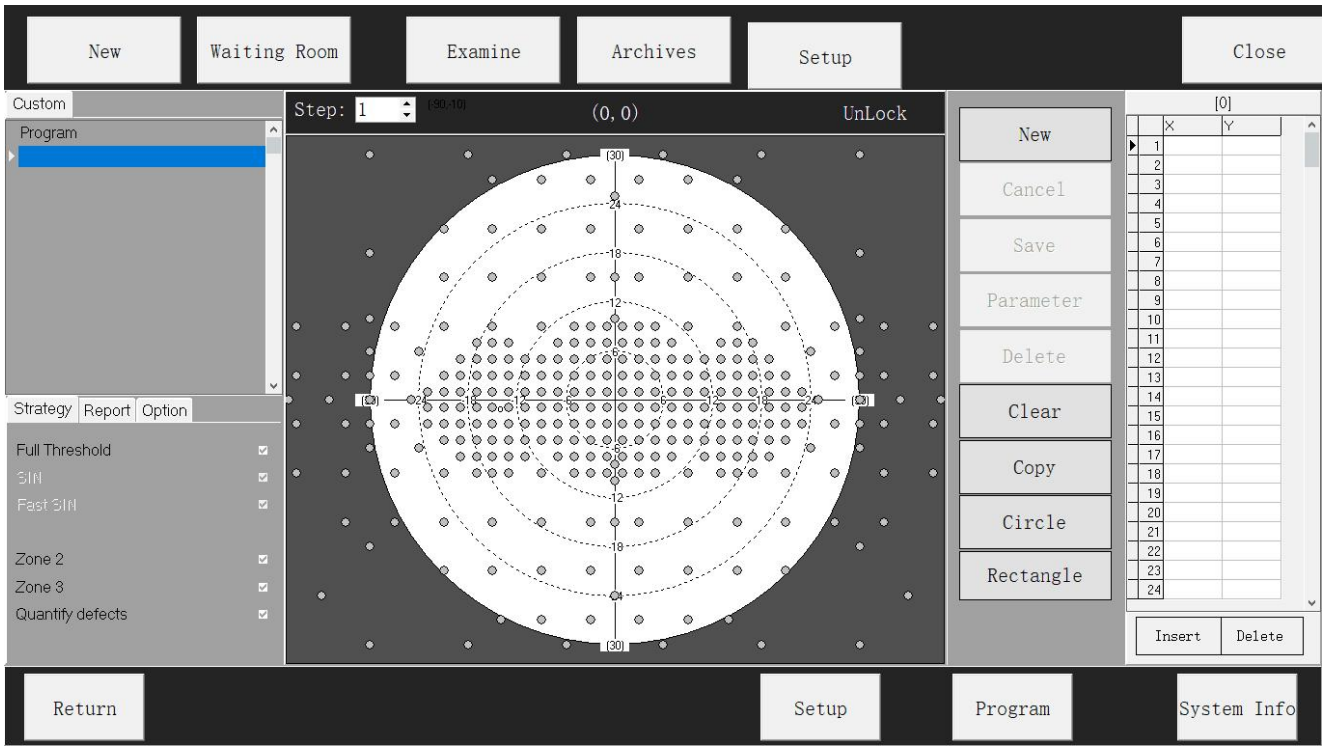


Archives Interface

Setup Interface can setup the relevant default data for perimeter, customize program, display manuf acturer information. As follow:



Setup Interface



Custom program interface under Setup Interface

6.4 Voice Guidance Setup

Perimeter software have 5 voice indication packet, w0,w1,w2,w3,w4, as follow listed:

w0: Cooperation for Visual Field Test Introduction
Precautions for perimeter examination: Please take your seat, hold the responder in your hand with your thumb above the button. Please place the jaw on chinrest while with your forehead against the forehead rest, to prevent the head from falling backward. Straighten your body to a comfortable position. During the entire testing process, the test eye should stare at the bright fixation spot directly in front, and do not move the eyeball. When you feel light flickering, please press the responder and release it immediately after hearing beep sound. Thank you for your cooperation.
Note: This Voice is controlled by the icon locate at [Examination Interface] called [Notice], press it for start before start testing, press it again to stop.

w1: Begin Voice content:
Start examination
Note: Ticked it Set default in [Setup] interface and save, it will play automatically after operation press [Start] icon in examination interface when test start.

w2: End Voice content:
Examination completed;
Note: Ticked it Set default in [Setup] interface and save, it will play automatically when each test finished.

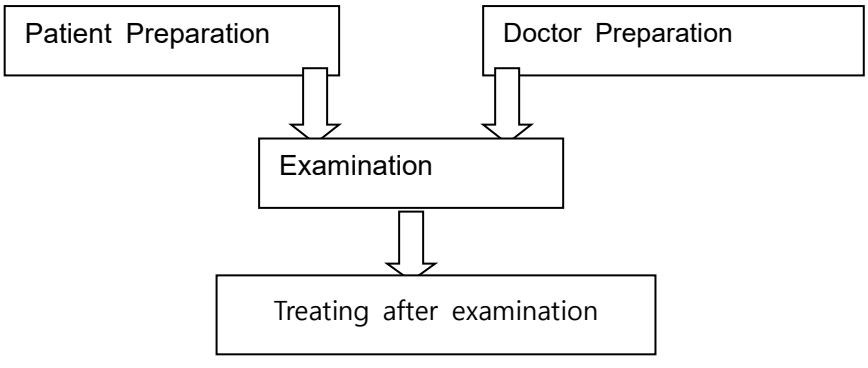
w3: Eye Move Voice content:
Please stare at the bright fixation spot in the center;
Note: Ticked it Set default in [Setup] interface and save, it will play automatically once pupil cannot track for 2s. This function and defined time can be revised according to patient's condition.

This Voice guidance can be disabled for current tested patient in Testing interface by tick off the [

Eye Move Voice] under the monitoring windows, for patient who cannot fixation well, or eye trackin g is unrecognized which may cause by reasons like long eyelash, often blinking, or abnormal big p upil size etc.

w4: Incentive Voice content
Good cooperation, please keep it.
Note: Ticked it Set default in [Setup] interface and save, it will play automatically once patient coop erate well and last for 60 seconds. This function and defined time can be revised according to pati ent's condition. Time setting box below is used to control minimum time interval for relevant voice guidance broadcasting.

6.5 Operation Steps



6.6 Preparation procedure before examination

（1） Clean the chinrest and forehead rest for each patient by absorbent cotton gauze with med icinal alcohol.

（2） Understand the patient's vision before test. If the visual acuity is lower than 0.1 or cannot see the fixation point, the visual acuity will be affected during the inspection and the inspe ction result will be inaccurate. Therefore, a corrective lens is required to correct the vision

（3） Cover the patient's eye which will not be tested with an eye shroud.

（4） Before the examination, the examinee should be taught how to stare and fixation, how to respond, and how to rest when tired. Note: The fixation point is the yellow indicator light i n the center of the sphere.

（5）Ask the examinee to place the chin on the jaw rest, place the forehead against the headrest, put the head straight, and always look at the fixation light in front of the examinee's eyes.

（6）Before the examination, the examinee should be taught: During the examination, if you feel that there are bright spots, please press the button with your hand and release it immediately. At this time, you will hear a "beep" sound, and the inspection of a light spot is completed. By analogy, the entire inspection can be completed. Or doctor can use [Notice] function on software to indicate how to do perimeter exam, icon is locating at Examination interface.

（7）The examinee should be taught before the examination: During the examination, the head should not be shaken and the eyeball should not be moved. If your eyes are tired, you can blink your eyes, or you can hold down the responder with your hands to pause the examination, then close your eyes and rest for a while, and then release the button to continue the examination.

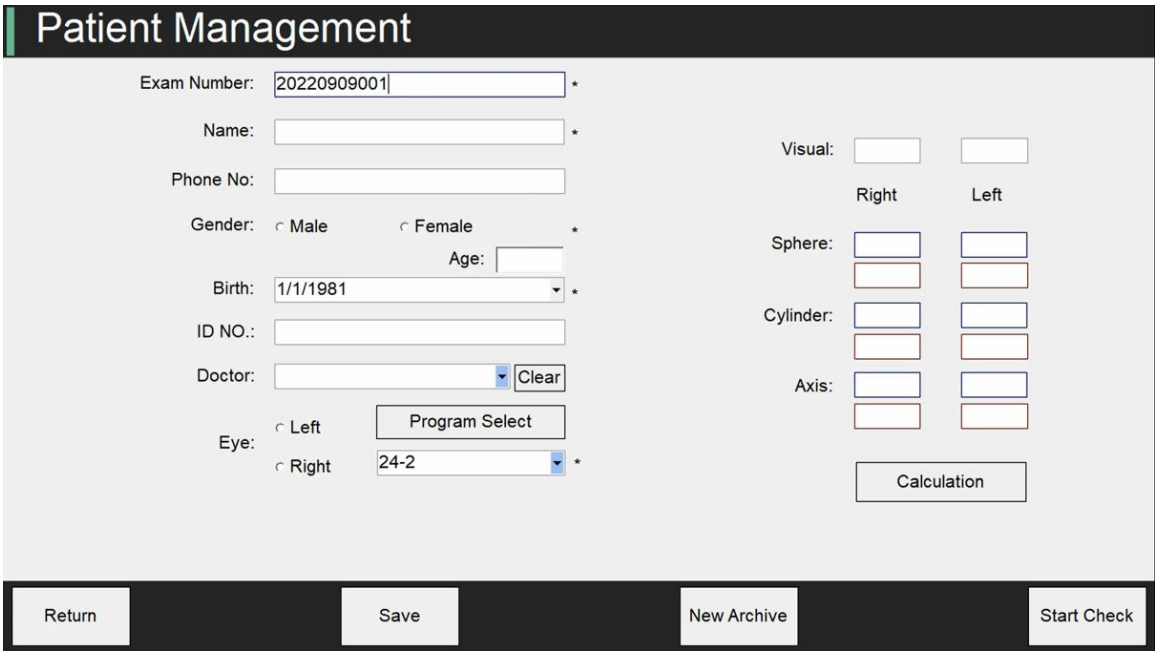
6.7 Steps for checking

PS: Double click on the Perimeter icon. The factory default account is [huvitz], and the initial password is [huvitz].

6.7.1 Register new patient information

Click the icon 

at Main Interface , the dialog box of register new patient will pop up as follow:



（1）Operator must input the information of Patient ID, Name, Birthdate, Gender, test eye and test program selection. Other information filling is optional for system, not a must.

Note: Input patient age and press Enter, a roughly birthdate will generate automatically.

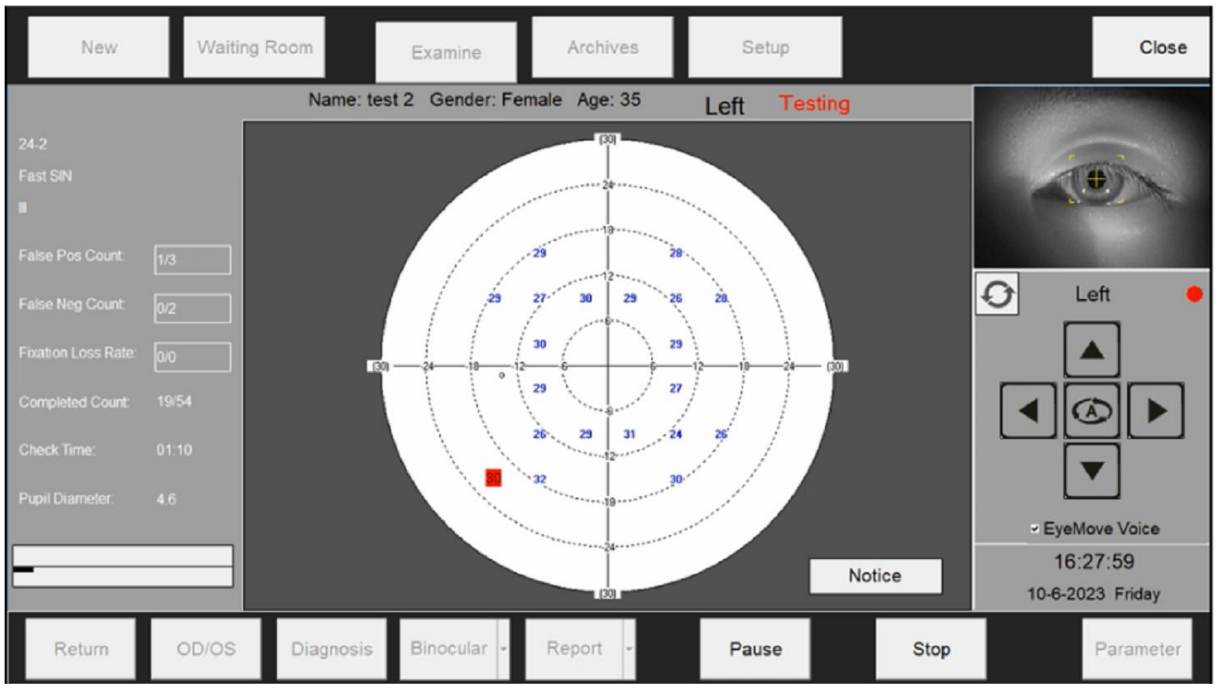
Patient with myopia, hyperopia and astigmatism will need to correct their diopter before starting the testing, perimeter set trial lens holder for this function. Click on the icon of [Calculating] and inputting patient's real refractive diopter, then click on the [Auto Calc] to get the corrected lens you need to put on perimeter trial lens holder.

Note: Corrective lens calculation is a age-related formula. Input right age of patient before calculation.

For example, if we inputting -5.0D under Sphere of Right eye, click on [Calculating], the system will generate the corrected lens need to adapt for patient is -1.75D. Doctor should test the patient with a -1.75D corrected lens.

（2）After finishing the information inputting and click Save icon , the patient information will transfer into Waiting List, after the patient test is completed and the report is saved, the patient information in the waiting area will automatically disappear. Click icon of New Archive to register another patient information. After finish one patient test, select patient in Waiting list and click Start Check icon to enter into a new test.

（3）Click Start Check icon , enter into Test interface :



Test Interface

Press the icon of [Notice] to broadcast the voice guide for patient on how to cooperate. Press it fo r start play before start testing, press it again to stop.

Indication below the monitoring windows:

Left/ Right: Auto recognized eye position

Red letter of Forehead Pos.: Indicate operator that patient forehead do not touch Headrest, need to correct.

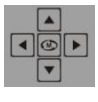
Patient pupil is right recognized by system if showed a green circle.

Patient pupil is not recognized by system if showed a red circle.

6.7.2 Adjust the eye position

According to the patient eye position, operator can adjust the eye position by following method

(a) Function button under perimeter touch screen to control chin rest up-down-left-right

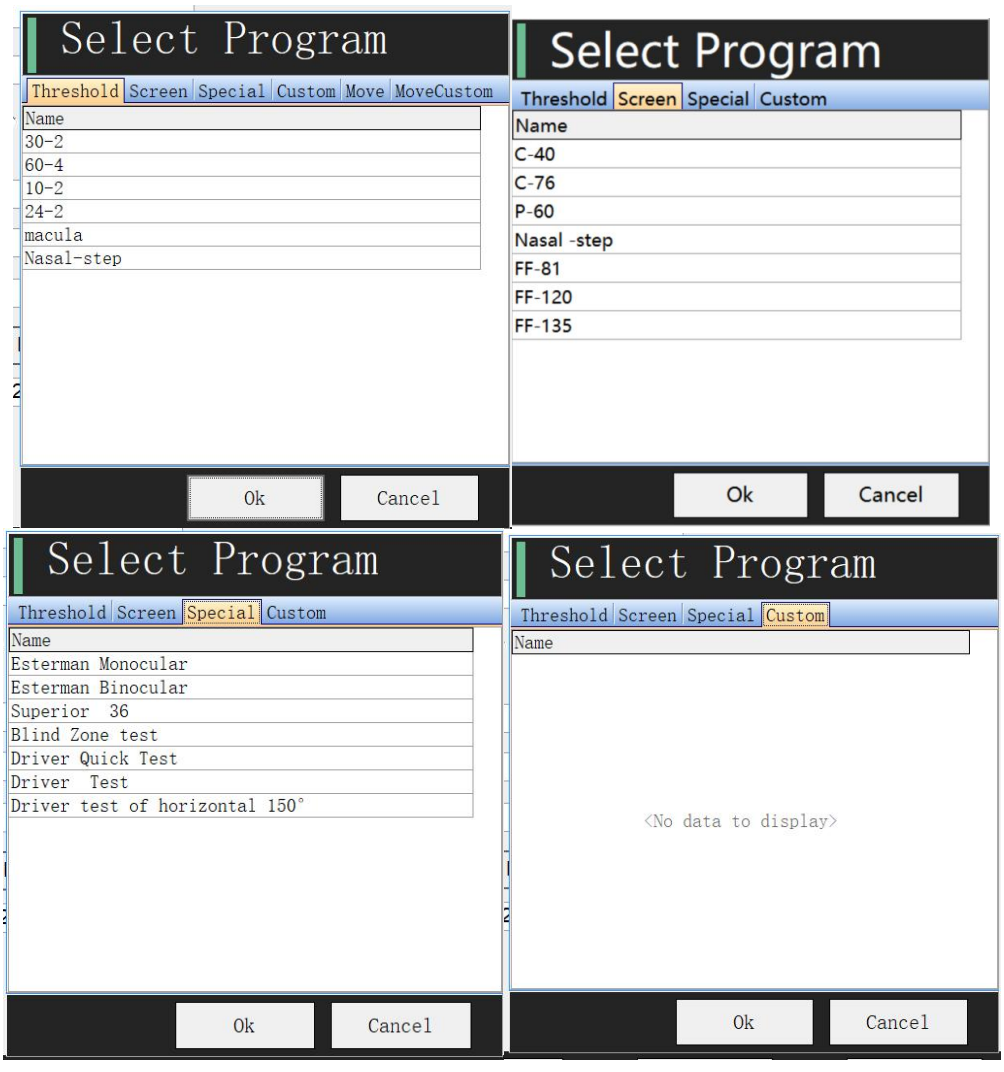
(b) Clicking the chinrest controller  on software by touch screen or mouse, to adjust the Patient eye in Left-Right and Up-Down direction. Align the center of the pupil of the examinee with the center of the cross on the monitor window

6.7.3 Program select

After adjust the patient eye position, Click Start to start test. The default testing program is 24-2, and strategy is Fast SIN, if you want to change to other program, click at the New Test icon , Change the program next to the OD/OS selection pull down menu. The test program is divided in to 6 categories: threshold program, screening program, special program, custom program, move a nd move custom.

PS: Move and Move custom is not available for HVF-100.

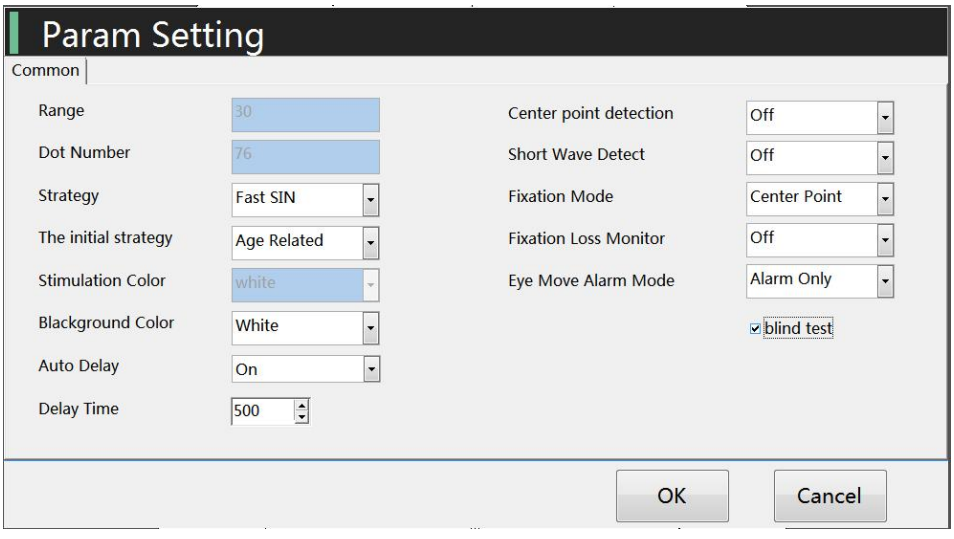
Users can choose according to their needs; as shown in the figures below :



Program introduction please see 6.13

If operator want to change the default strategy, click at [Parameter] icon below the test interface , a nd choose the relevant parameter for current test.

Parameter Setting Interface Introduction please see 6.19



6.7.4 Stop and Pause Function

During the test, if there is an abnormal situation that needs to suspend the test, the operator can click the icon Pause ,or if the examinee needs to rest when he is tired, the test can be paused by pressing and holding the responder without releasing it. The previous test can be resumed when the condition is restored;

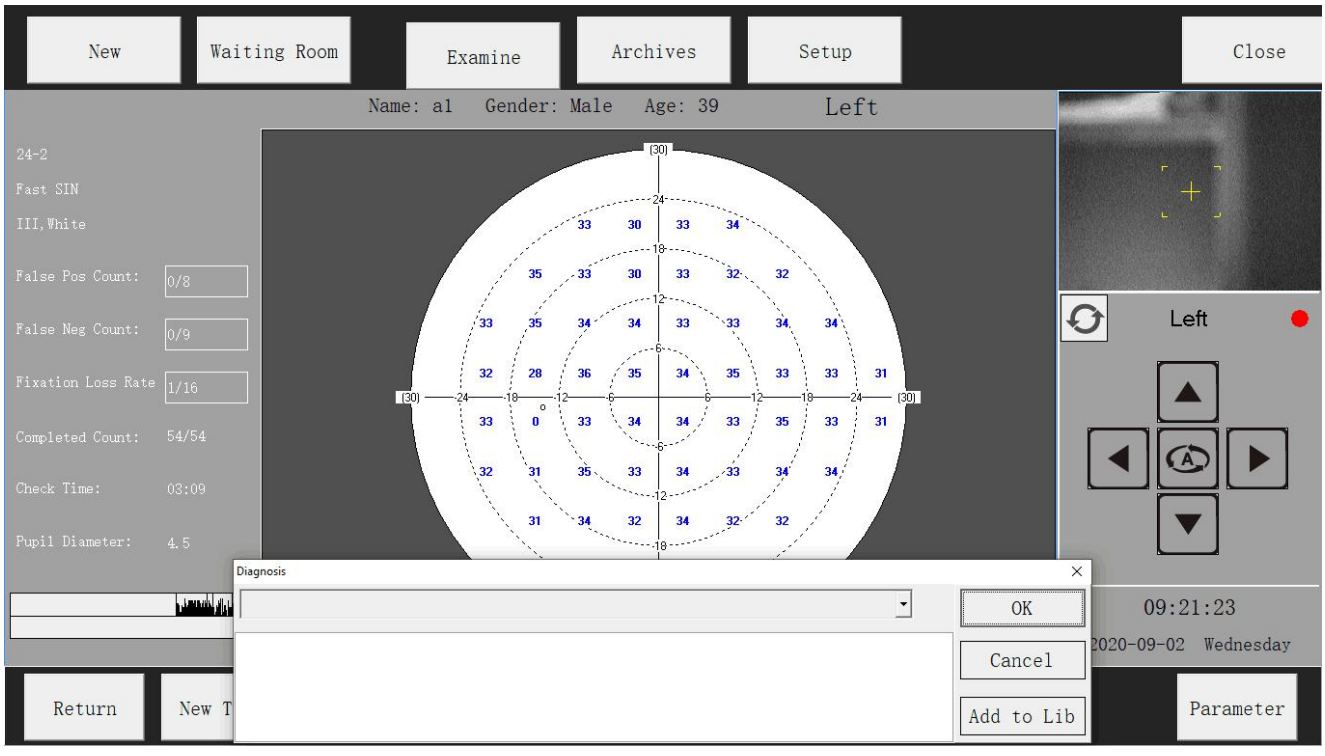
Press the icon Stop to stop the test directly, and restart the test after the condition recovers.

6.7.5 Test another eye

If need to test examinee's another eye, click the icon of [OD/OS] which locate at the bottom of Test Interface, choose another test eye and click Save ,and start the test.

6.7.6 Diagnosis and report

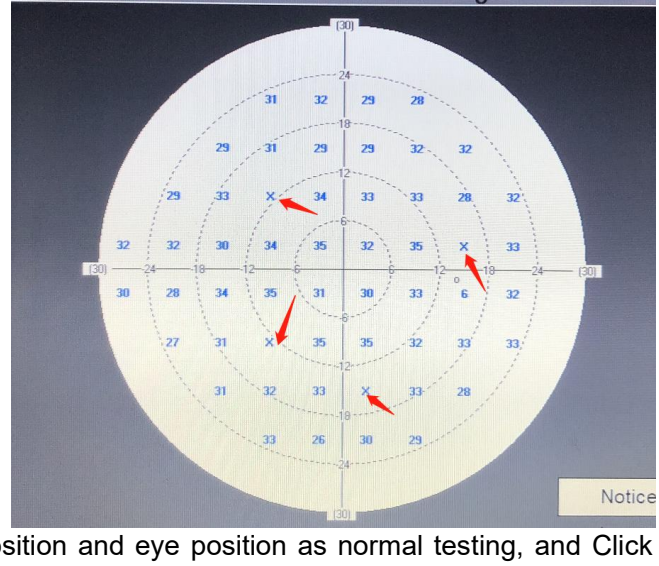
After test finished, press Diagnosis Icon to input doctor diagnosis information if needed. And click on [Report] Icon or pull down menu beside it to review and print report.



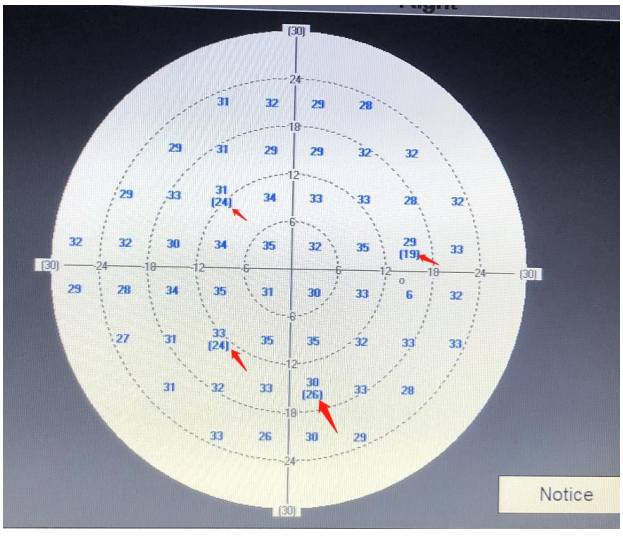
6.7.7 Doubted Points Recheck

After test finished for each eye, if there is/are doubted points there and operator wish to have recheck, follow the procedure below:

- Click on icon of [SelectDot] below the test interface
- Select dots need to recheck by clicking on it, and it will change to X.



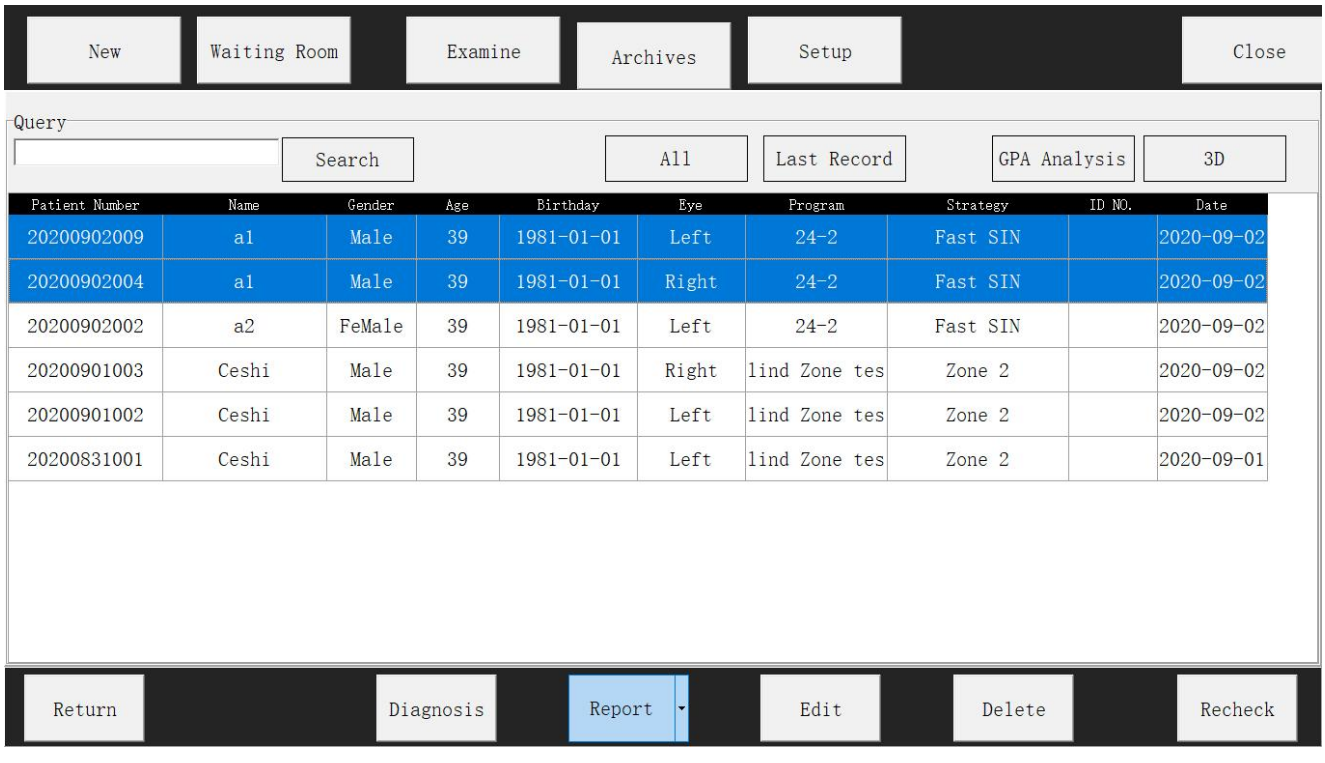
- Align patient head position and eye position as normal testing, and Click on [Start] icon to test only these points again.
- After test finished, 2 value will be showed at these selected point. Upper one is the new result, and the one in below bracket is the previous record.

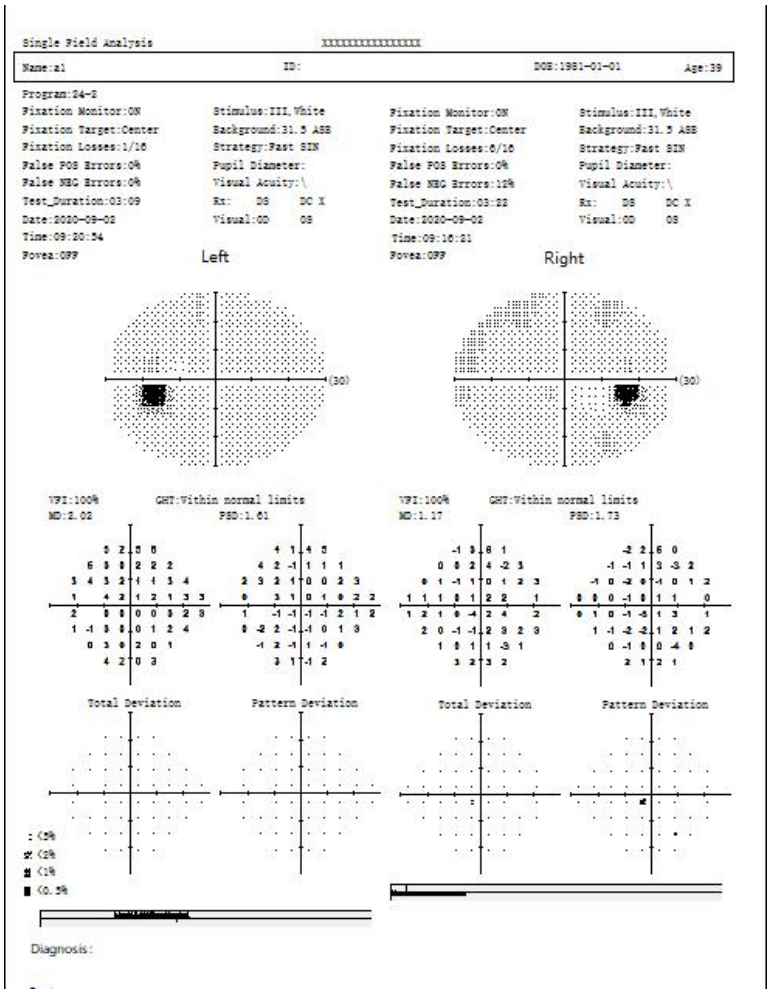


- The DB value plot in test report printed and saved will show both record as below, all analyze are based on new result.

6.7.8 Binocular report

Same patient, same test program and strategy, after finish both eye's test continuously, click on th e [Binocular] icon in Examine Interface to preview the Binocular report. After that enter into [Archi ves] interface, select the 2 test record by Ctrl key and mouse, click on Icon of [Report], a Binocul ar report will be generated and can be printed as normal also. Find below:





Sample report of Binocular Report

6.8 History record query

6.8.1 Click 

icon at Main Interface, input the keyword to query.

The query result will display below, select the one and click 

icon to check the test report.

Click the icon of [ALL] to display all cases. Click the icon of [Recent] to display the latest cases.

The query results are displayed in the medical record column below. The user can select a record, and then click the icon of [EDIT] to modify the patient information. Click the icon of [DELETE] to delete the record. Click the icon of [DIAGNOSIS] to add or modify the diagnosis for the patient. Click the icon of [REPORT] to view the patient's examination report. Click the icon of [RECHECK] to enter the examination interface and examine the patient again. Click the icon of [3D], to enter the interface of 3D image and color image of patient visual island, which is only for preview only, not for print.

6.8.2 GPA Analysis

When the same patient has been reexamined for multiple times, click the [GPA Analysis] icon to enter the Glaucoma Progression Analysis interface to view and analyze the progression of the patient's condition.

In the progression analysis interface, click the [Baseline] icon to view the baseline of the patient's condition.

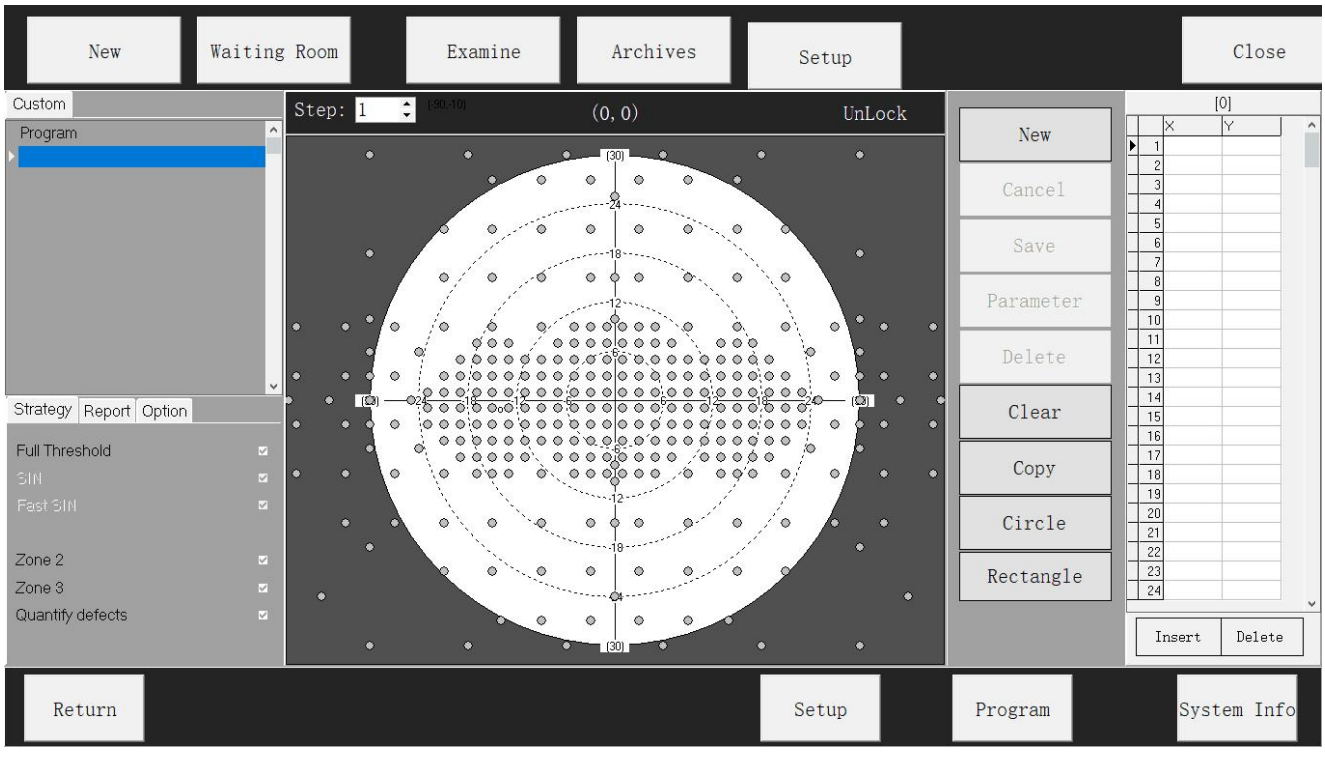
Click the [Last 3 records] icon to view the progression of the patient's last three conditions.

Click the [Single progression analysis] icon to view the single progression of the patient's condition.

When a certain inspection result is not needed, you can select the inspection result and click the [Delete] icon below to remove the inspection result. You can also click the [Restore] Icon to restore the removed inspection result.

6.9 Custom Program

Click Setup banner icon and enter into Custom Program Interface by click Program icon below :



PS: 'Step' in Program customs means the horizontal and vertical intervals between points, it is based on Cartesian coordinates. Default data is 6 degrees; operator can define it accordingly to clinical needs.

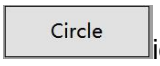
（1）First Click the 

icon locate at upper right of software to register a new program, Name

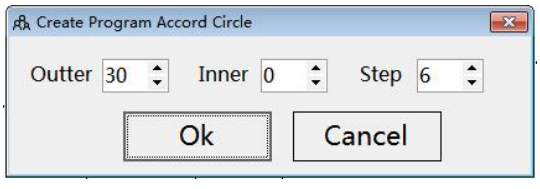
the program and click 

,and all setting will be stored under this named program, as follow:

（2）There is 4 ways for spots location selection for custom program:

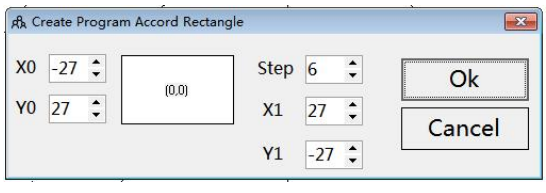
1st : Stationing in a circular manner, click 

icon , Enter the range of the outer circle and the inner circle and the distance between points, the unit is eccentricity degree, and the site will be automatically generated after confirmation.



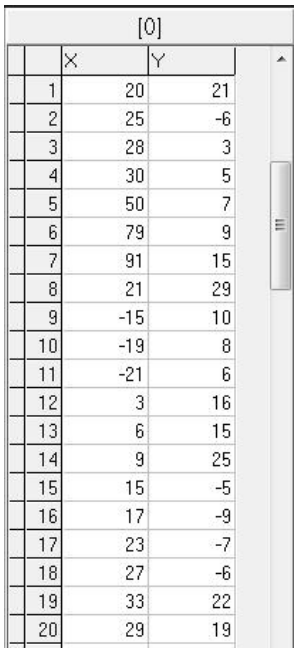
2nd : Stationing in a rectangle manner, click 

icon , Enter the coordinates of the diagonal position of the rectangle and the distance between points, the unit is eccentricity degree, and the position will be automatically generated after confirmation.

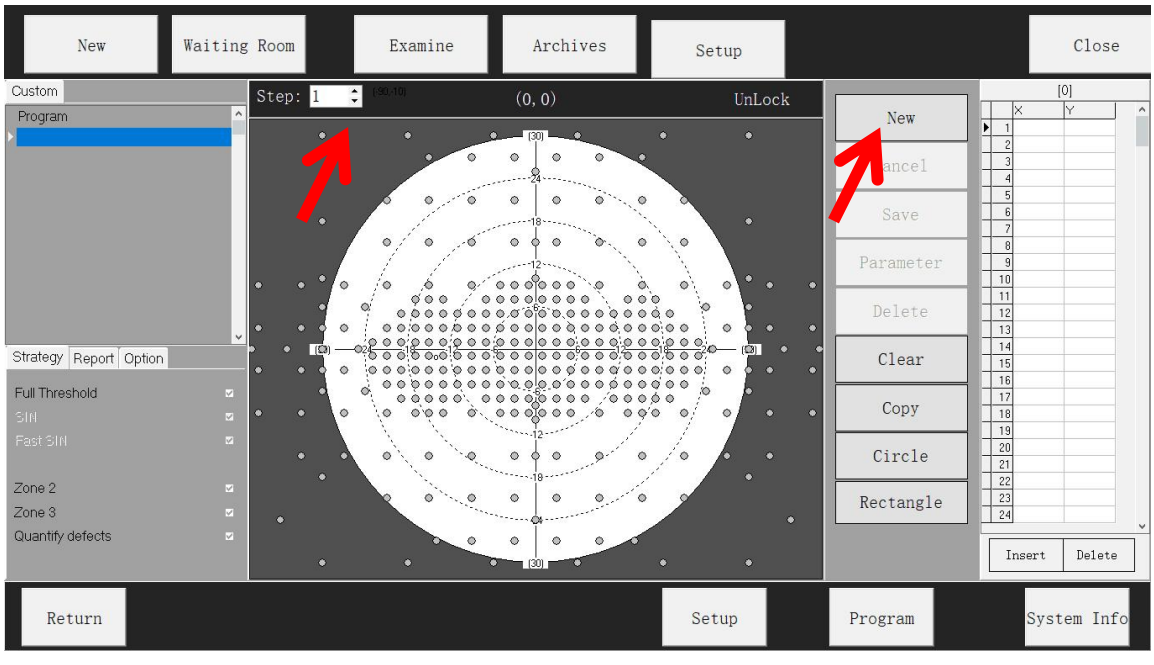


3th : Enter the coordinates of each location directly in the location coordinate column, the unit is eccentricity , then click 

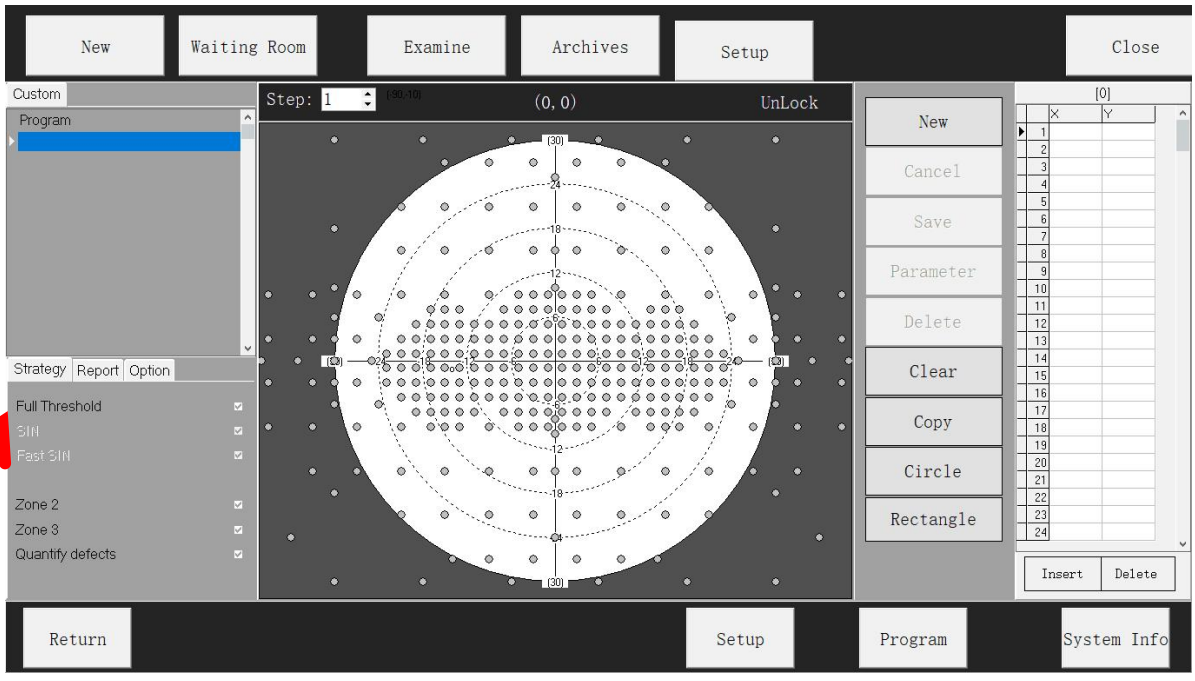
icon.



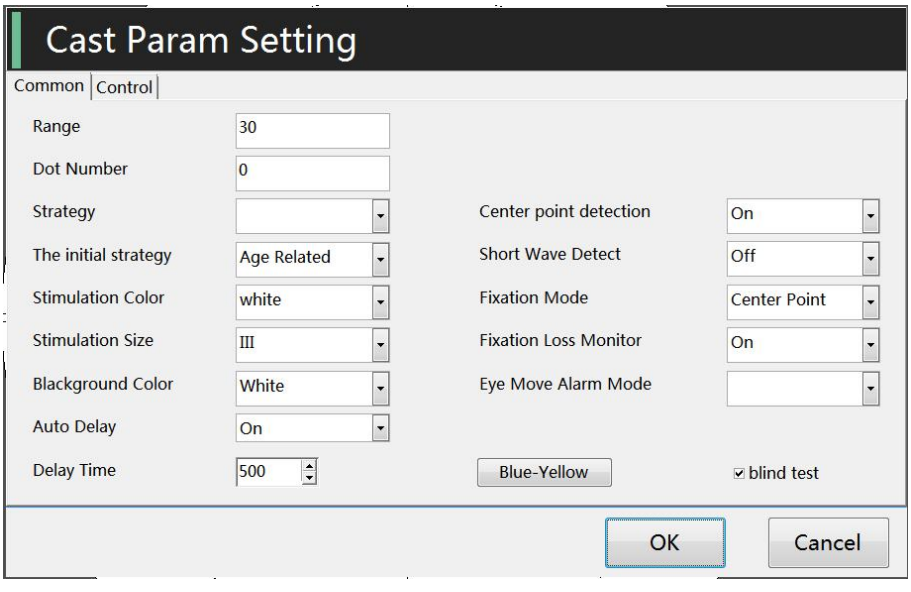
4th: First set and input the spacing degree between points after Step box, the unit is eccentricity degree, click on [Unlock] icon, then use mouse click on the points need to test in this program, and click on [Lock].



(3) Choose the Strategy, report and options for this program.



(4) Click Parameter icon，setup the other parameters, such as if no need, then to Off The Center Point detection which means FOVEA. Or to set the Eye move alarm mode to be [Alarm Only].



Then you will find this program appears in [Program Selection] Interface under [Customs] Page.

6.10 Analyze Function

(1) Single Field Analysis (SFA)：
SFA analyzes the results of a single threshold test and provides the most information for a given t est. SFA is available for all central test patterns regardless of test strategy. Click on [Single] to get the SFA report in Archives or test interface.

(2) Multi Field Analysis(MFA):
An overview report can be printed to presents the results of up to twelve (12) SFA tests for

comparison.
Click on [Overview] to get the MFA report in Archives or test interface.

(3) Reliability Analysis:
There are reliability indices are displayed on the left side of the testing interface. The types of indi ces displayed depends on test type and settings used and include Blind Spot Errors (Fixation Loss es), False Positive, and False Negative. For details see 6.10.

(4) Glaucoma Progression Analysis (GPA)
Only SIN tests may be chosen initially for GPA analysis. You may mix any combination of SIN and

Fast SIN tests to create a GPA analysis. Perimeter will automatically choose the two oldest compat ible
tests to be the Baseline. Tests displaying high False Positives ≥ 15% are excluded by default from GPA
analysis. You can manually change the default Baseline tests or exclude specific tests.

(5) Glaucoma Hemifield Test (GHT)
For 24-2 and 30-2 tests, the GHT evaluates five zones in the superior field and compares these z ones to their mirrored zones in the inferior field. For details see 6.12

(6) Visual Field Index (VFI):
VFI is a weighted average of the ratio of the measured threshold to the age-adjusted normal thres hold for all points that have depressions in the Pattern Deviation at the 5% level or higher. The V FI is weighted to give increased importance to thresholds near the point of fixation.

6.11 Test report reliability

Multiple index provided in this system for operator to assess the reliability of test result.

There are below:

(1) Number of testing dots: mean the total number of testing dots of the perimeter.

(2) False Positive Errors (False POS Errors):

False positive errors occur if patients respond when no stimulus is presented. For the purposes of this study, we define a false positive response as randomly occurring, independent of stimulus pres entation, and hence independent of any monitored response window. The system will count it and i f it's over 15%, the test report will be treated as unreliable.

(3) False Negative Errors (False NEG Errors):

False Negative errors occur when the patient does not respond to a suprathreshold stimulus in an area where the threshold has already been measured. The interpretation of false-negative errors is not as clear as that of false-positive ones, because they can be produced by a variety of sources. Visual field test results of patients whose false negative errors exceed 20% are not considered reli able.

With the severe visual defect patient, even they cooperate with the test very well, their False Nega tive errors can be higher than 50%, so for the abnormal visual field, the application value of the fa lse negative rate is limited.

(4) Fixation Losses/FL(Blind Spot Errors)

Fixation Losses are recorded when Heijl/krakau Blind spot Monitor (See 6.15 & 6.19) is active and

occur when a patient responds to a stimulus presented in the blind spot. The number of response is recorded over the total number of stimuli presented. A high error rate may mean poor patient fixation during the test or that the blind spot was located incorrectly.

Fixation Losses>20% are not considered reliable.

(5) Percentage (Expressed as Letter P)

P<5% : Less than 5 people within 100 people have this kind of visual situation

P<2% : Less than 2 people within 100 people have this kind of visual situation

P<1% : Less than 1 people within 100 people have this kind of visual situation

P<0.5% : Less than 0.5 people within 100 people have this kind of visual situation

(6) Total deviation

The difference between a patient’s threshold sensitivity and the age-corrected normal sensitivity fro m the perimeter’s internal normative database at each tested location of the visual field.

6.12 Perimeter Index

The visual field index is a concise value that describes the overall visual field obtained by statis tics of the raw data obtained from a visual field inspection. It is an evaluation parameter of the tot al visual field and can quickly assess visual field defects.

（1）Mean sensitivities (MS) :

Equal to the light sensitivity of each site divided by the total number of sites, it is the calculation o f the light sensitivity of each site

The average number of operations, in dB.

（2） Mean Defects (MD):

The average of the examination value of all spots minus normal value, it shows the condition of th e patient’s vision sensitivity comparing with those of the same age.

（3）Short Floating (SF):

It shows the light sensitivity deviation appearing in one perimeter examination process; it shows the reaction consistency in the course of examining. The bigger the value is, the worse the cooperatio n the patient shows. The short wave will become height in the scope of abnormal visual field. Wh en more scope in the visual field become abnormal or the degree of abnormal increases, the whol e wave will become higher.

（4）Pattern standard deviation (PSD)

It is a measurement of the degree which the shape of the patient's measured field or hill of vision departs from the "NORMAL" age-corrected reference field model. The value is expressed in decib els and any value of 2dB or greater will have a (P) value next to it indicating the significance of t he deviation.

(5)Pattern deviation (PD)

The localized loss at each tested point, after the removal of the effects of any generalized loss; pa ttern deviation decibel (dB) values are the total deviation values minus the general value.

6.13 Glaucoma Hemifield Test（GHT）

It is for automated evaluation of single static threshold visual field test results in glaucoma.
It is also constructed to detect field loss that is symmetric around the horizontal meridian.

（1）Outside normal limits. The GHT is described as “outside normal limits” when differences between a matched pair of corresponding zones exceeds the difference found in 99% of the normal population, or when both members of a pair of zones are more abnormal than 99.5% of the individuals with the normative population.

（2）Borderline. The GHT is described as borderline when matched pairs of zones are abnormal at the 97th percentile within the normative database

（3）General reduction of sensitivity. Visual Fields (VF) are described to have generalized reduction of sensitivity when both conditions for “outside normal limits” are not met, and the best region of the VF is depressed to a level at the 99.5th percentile within individuals of the normative database.

（4）Abnormally high sensitivity. The GHT is described as having abnormally high sensitivity when the overall sensitivity in the affected region of the VF is better than 99.5% of individuals within the normative population.

（5）Within normal limits. VFs are described as being within normal limits when none of the above conditions are met.

6.14 Introduction of test program

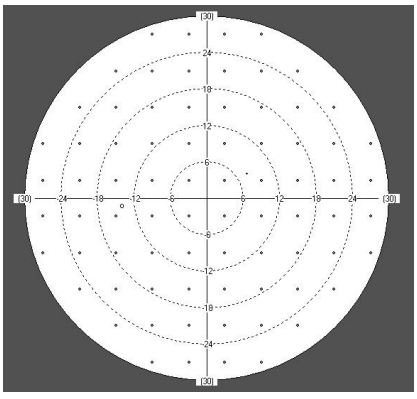
6.14.1 Threshold Test program

（1）30-2

Main applications : Common test, glaucoma, optic nerve disease, retinal disease

Test Range : 0° ~ 30°

Test points : 76 dots

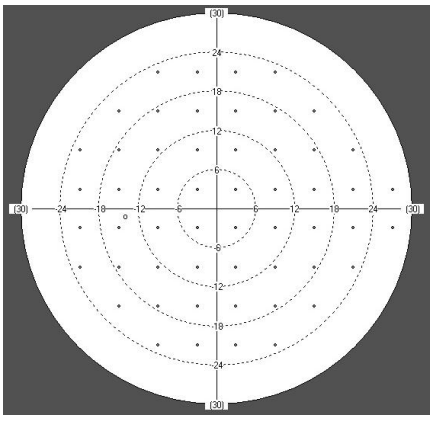


（2）24-2（Recommended）

Main applications : Common test, glaucoma, optic nerve disease

Test Range : 0° ~ 24°

Test points : 54 dot

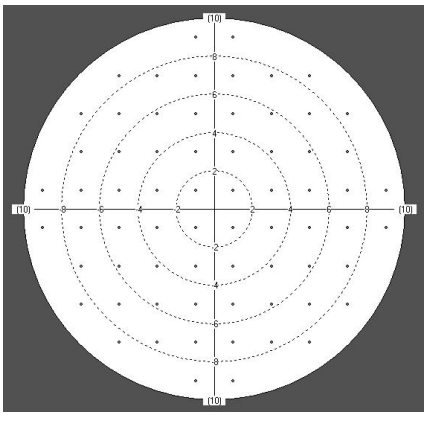


（3）10-2

Main applications : Macular disease, retinal disease, optic nerve disease, advanced glaucoma

Test Range : 0° ~ 10°

Test points : 68 dots

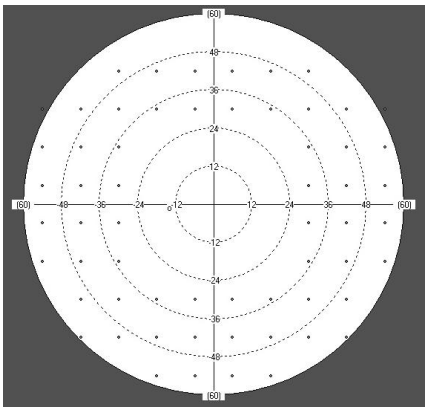


（4）60-4

Main applications : Retinal disease, glaucoma

Test Range : 30° ~ 60°

Test points : 60 dots

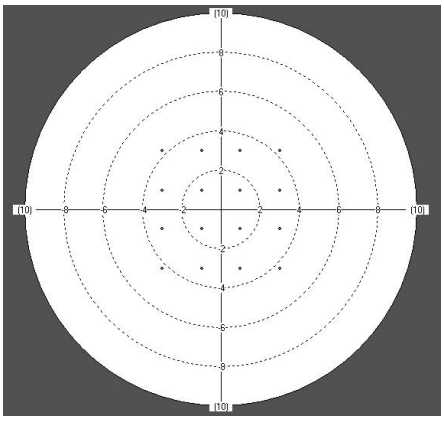


（5）Macula program:

Main applications : Macular disease

Test Range : 0° ~ 5°

Test points : 16 dots

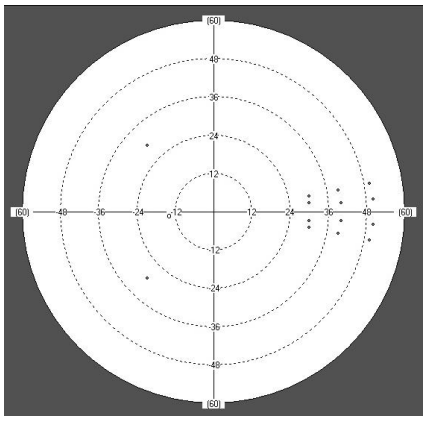


（6）Nasal step program :

Main applications : Glaucoma

Test Range : 30° ~ 50°

Test points : 14 dots



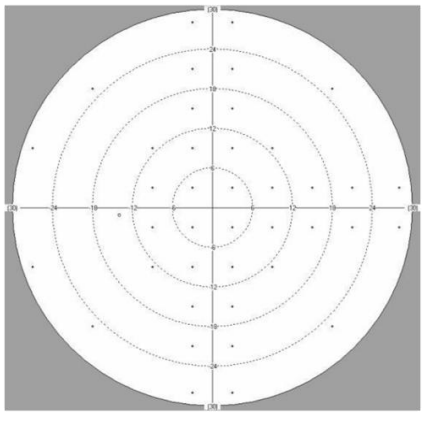
6.14.2 Screening test program

(1) C-40

Main applications : Common test

Test Range : 0° ~ 30°

Test points : 40 dot

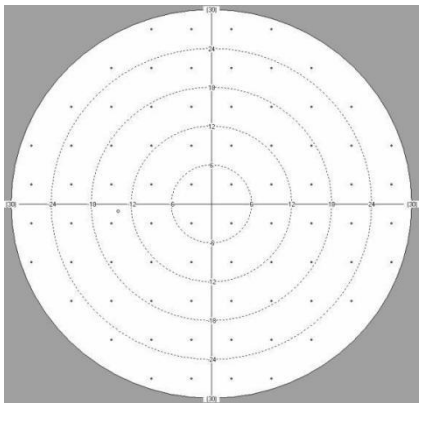


(2)C-76

Main applications : Common test, glaucoma, optic nerve disease

Test Range : 0° ~ 30°

Test points: 76 dots

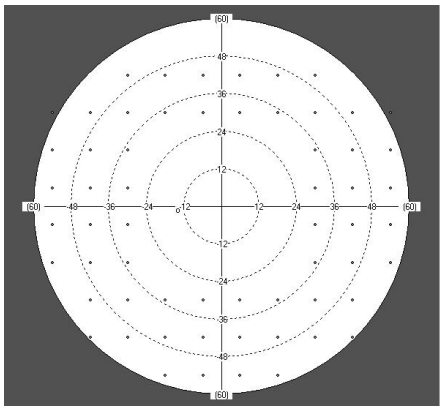


(3) P-60

Main applications : Common test, glaucoma, neurological with central exam, retinal

Test Range : 0° ~ 60°

Test points: 60 dots

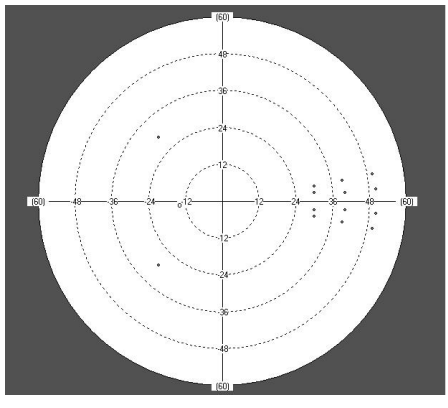


（4）Nasal-step

Main applications : glaucoma

Test Range : 0° ~ 60°

Test points: 14 dots

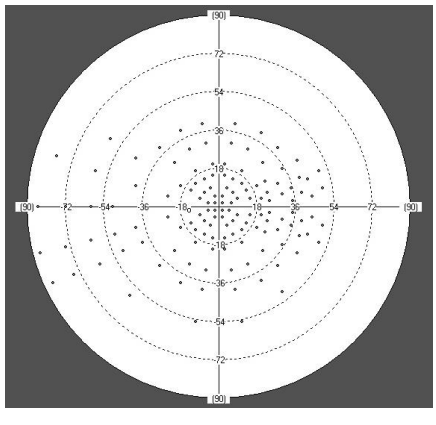


（5）FF-81

Main applications: Full-field screening test, retinal disease, glaucoma, optic nerve disease

Test Range : 0° ~ 60°

Test points : 81 dots

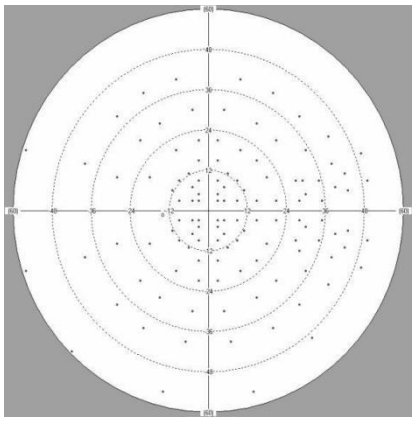


（6）FF-120

Main applications : Full-field screening test, retinal disease, glaucoma, optic nerve disease

Test Range : 0° ~ 60°

Test points : 120 dots



（7）FF-135

Main applications : Full-field screening test, retinal disease, glaucoma, optic nerve disease

Test Range : 0° ~ 90°

Test points : 135 dots

6.14.3 **Specialty test program**

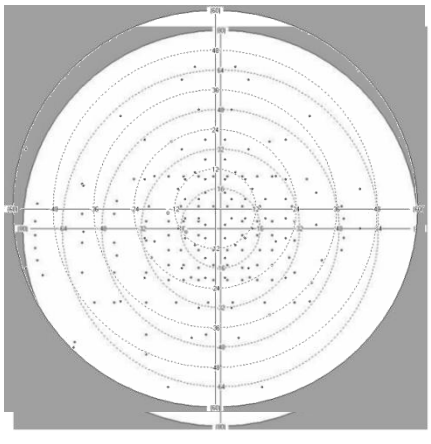
(1) Esterman monocular

Main applications : Driver test for single eye

Test Range : 0° ~ 60°

Temporal side 75°

Test points : 100 dots



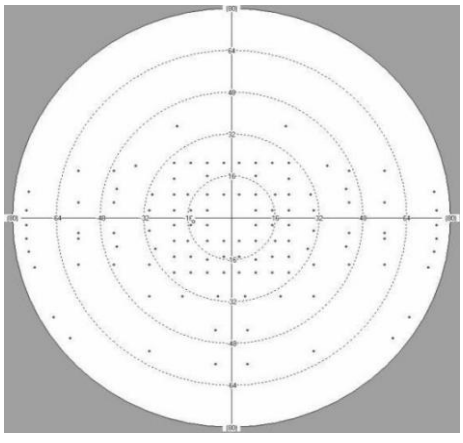
(2) Esterman binocular

Main applications :

Driver test for double eyes

Test Range : Double temporal side 150°

Test points : 120 dots



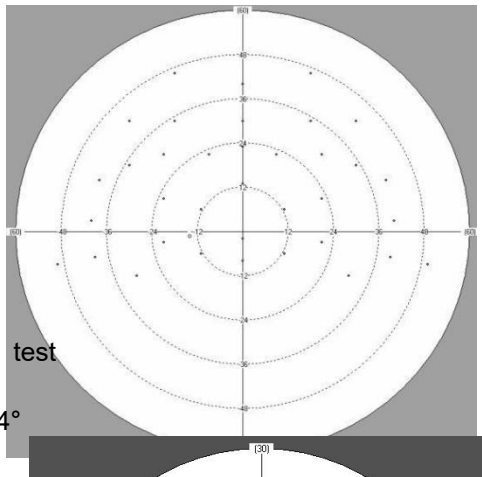
(3) Superior 36

Main applications :

Screening upper visual field

Main applications : upper visual field 60°

Test points : 36 dots

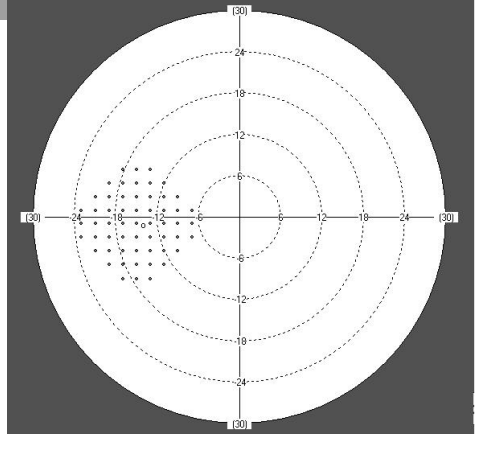


(4) Blind Zone Test

Main applications : Optic nerve field test

Main applications : Temporal side 24°

Test points : 57 dots

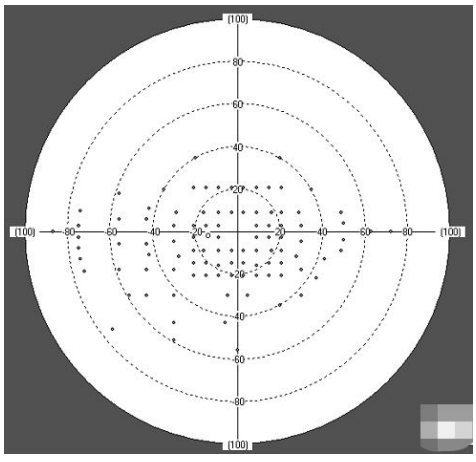


(5) Driver Test

Main applications：Screening for driver test

Main applications：0° ～90°

Test points：100 dots

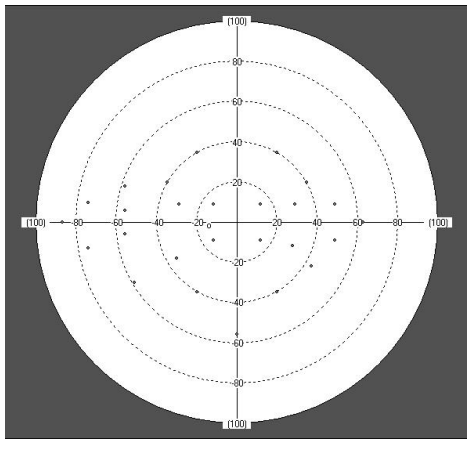


(6) **Driver Quick Test**

Main applications : Fast screening for driver test

Main applications : 0°～90°

Test points : 26 dots

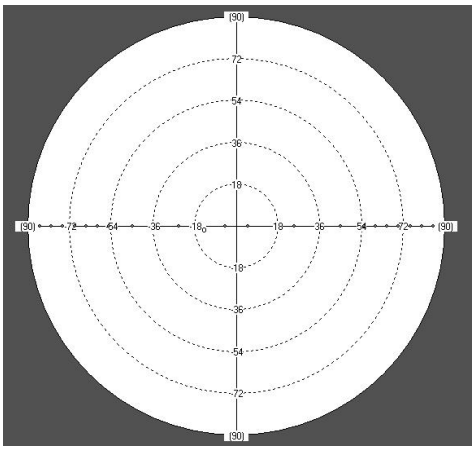


(7) Horizontal View Angle Check

Main applications：Horizontal angel test for driver

Main applications：0°～90°

Test points：20 dots



For other showed [Trouble Shooting Programs], are not program for clinic professional. See details at 8 Trouble Shooting.

6.15 Test Strategy

(1) Full Threshold: It adopt 4-2 as standard for response, the brightness of the stimulus appearing at each dot is gradually increased or decreased, and the arithmetic mean value obtained by calculating the "visible" and "invisible" brightness values ,which is responded by the patient， is taken as the test result value at that dot.

(2) Smart-Interactive (SIN)-Recommend: Calculate and correct the stimulate value in the whole process of testing. Based on the response

(3) Fast Smart-Interactive (Fast SIN): Calculate and correct the stimulate value in the whole process of testing, variation range will be 20%~50% faster than auto threshold strategy, Based on the response.

(4) Zone 2: Stimulate with superior threshold value, if respond , treat as normally, if not, treat it as abnormal.

(5) Zone 3: Stimulate with superior threshold value, Responded treat as normally. If the patient do not response, it will stimulate with the brightest light, If the patient response, it will be recorded as relatively scotoma, if still without response, it will be recorded as definite scotoma.

(6) Quantify Defects: Same as Zone 2, except the sensitivity at each missed point is measured relative to the expected threshold. Use with all Suprathreshold test patterns except the Esterman tests.

(7) Single Stimulate: Brightness of the first stimulus at the inspection site is the brightest which is stationary

(8) Age-Related : The initial brightness of the stimulus at the examination site is at normal level of the subject in the same age group.

(9) Threshold-Related : The initial brightness of the stimulus at the inspection site is the test result of the adjacent point.

6.16 Fixation Monitoring Function

(1) Heijl/Krakau Blind Spot Monitor

Perimeter will present stimulus in blind spot during the test. The number of responses is recorded over the total number of stimuli presented. Record rate are calculated as Fixation Losses, see 6.10 (4) and 6.19 (9).

(2) Video Eye Monitor

A video eye monitor displayed the eye position in real-time which is locate at Testing Interface.

(3) System Alarm

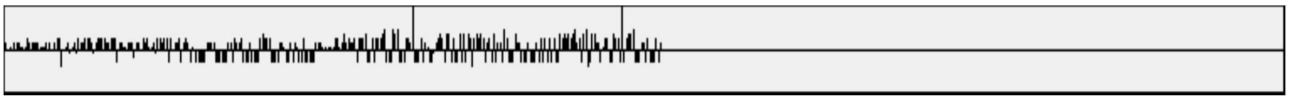
- See 6.6.1, item (3), about Graphic shows in Green Circle and Red Circle to alarm the p upil recognition.
- See 6.19, Introduction about Voice Alarm.

(4) Head Tracking

- See 6.6.1, item (3), Red Letter of [Forehead Pos.]: Indicate operator that patient forehea d do not touch Headrest which need to correct..

(5) Gaze Tracking

The Video Eye Monitor will monitor eye position all the time and form a Gaze Tracking curve pl ot in test report.



The monitoring system of the perimeter can precisely and accurately monitor the eye position.
Upper part above the horizontal line, the rising line shows the eye position shift range while the cursor presented. Higher the line is, farther the shift distance is.
Lower part below the horizontal line, each line indicates that the system cannot recognize the ey e position which may be caused by situation like eye blinking or very long eyelash etc.

(6) Auto Eye Position Calibration

The Chinrest and forehead rest are programmed to be AI controlled. Patient eye position will be auto aligned if pupil deviated from center of Video Eye Monitor.

6.17 Perimeter Academic Discourse

- Different Light Threshold: Under the circumstance of stationary lighting, if the stimulate spot visibility is 50%, then this spot stimulate intensity will be different light threshold
- Vision Island: The altitude means light sensitivity, the area means the islands scope, image the visual field as an island in the sea, every spots of the retina will correspond a position on the island, the spots fixation spot which is the macular area with highest sensitivity, constitute the peak of the island, and the around area the sensitivity will be lower, which constitute the circum area of the vision island.
- Visual Isopter: The vertical height of the spot on vision island means the visual acuity, the lines on the same vertical height is the isoheight, in visual field the name is isopter.
- Physiological Blind Spot: The optic nerve which without photoreceptor cell is located at 15degree bitamporal of the visual fixation point, there area cannot see things, that is the physiological blind

spot, in the visual island its shown as a vertical deep hole.

- Tubular visual filed (Center visual island): The visual field shrink to centrality extremely. Only remaining the visual field about 5-10degree
- Sector-shaped Depression (Wedge-shaped Defect): The board line of the visual field defect will move along two ways of the visual field, the defect will look like a sector, the tip is point to the physiologic blind spot. Its meanly appeared in the bitamporal defect.
- Tetarfanopia Depression: It's also named quadrantanopia, the two board line of the defect is one vertical diameter line and one horizontal diameter line, the defect area occupied a whole quadrant.
- Hemoanopia：There are vertical and horizontal hemoanopia two types. For vertical, the board line is central vertical, for horizontal the board line is horizontal diameter line.
- Macular Sparing: Its mainly appeared in the vertical hempanopia, which will retain about 5degree visual at the center area, the macular sparing is remind the defect location is at visual pay-off.

6.18 Data Recover and Backup

（1）Medical record(Test report) backup

The software will be default installed in D:\Perimeter, and the data will be stored in D:\perimeter\dbfs. For most of time, the system is safe and reliable

But as the report is very important, to avoid lose data because of virus or computer failure, we advise to back up the report data weekly or monthly.

Backup method: Quit from the perimeter software, copy the whole folder of D:\perimeter\dbfs and paste it to the target folder, we suggest to discs' data and label the date on it.

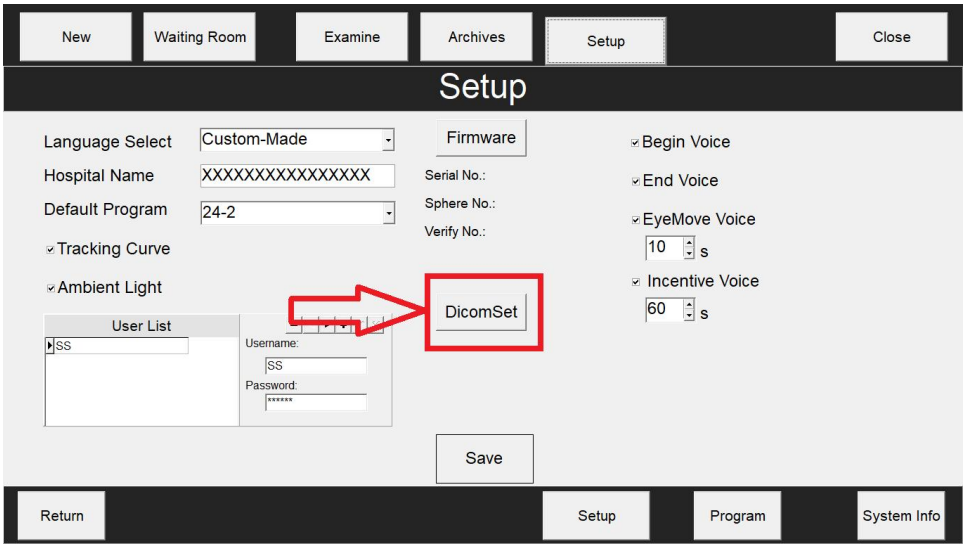
（2） Medical record(Test report) recover

Normally you don't have to recover the data, but sometimes the computer may broken because of virus and system failure, you have to format folder C which will lead to data lose while reinstall the system, after fixed the computer you have to reinstall the system and recover the data from the back up folder.

Firstly, select the one you want to recover from the back up, copy and paste them to the same folder of D:\ perimeter\dbfs

6.19 DICOM Connection Setup

Open the software and enter the settings interface; Click the **DicomSet** button.



Enter the DICOM interface and set up information about the hospital intranet server:

Storage: Equipment transfer the image into a DICOM image, communicating through DICOM, and transmitting it to the PACS server. When the inspection is completed, the equipment will upload the image through the hospital network.
(Necessary)

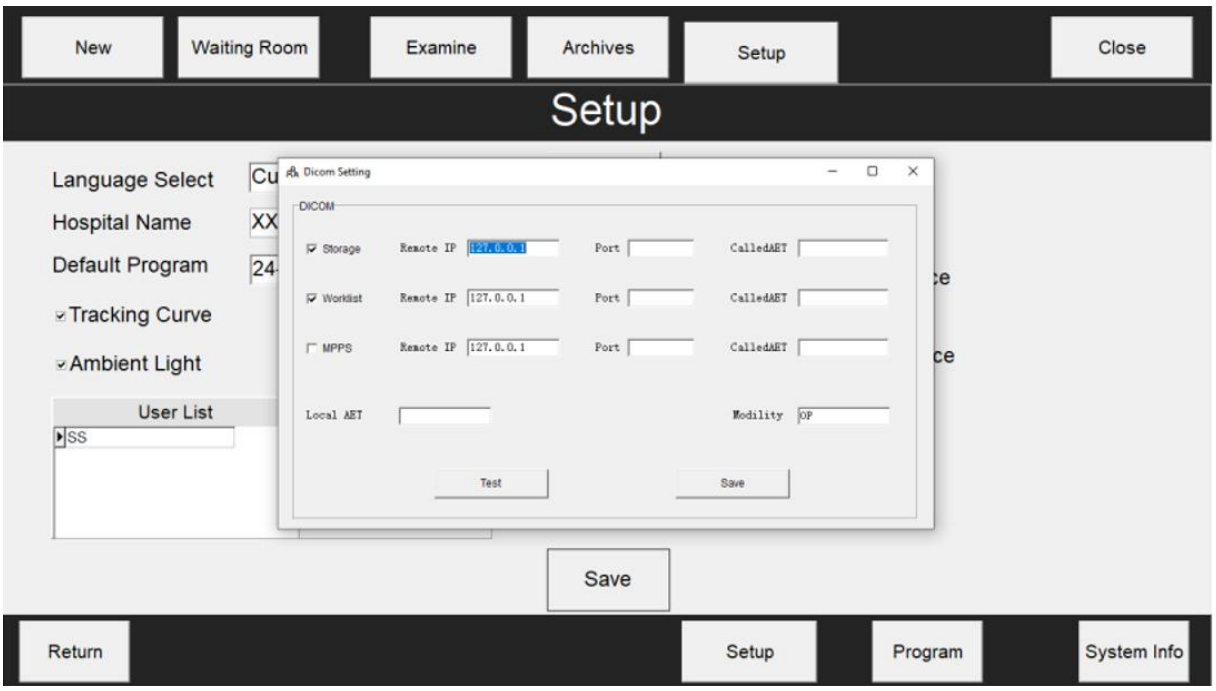
Worklist: Obtain patient information table. The advantage is that the taskbar table can avoid repeated input of basic data, and can also avoid data errors; If this function is not available, the person will also need to manually enter the data on the equipment once after entering the data during the RIS registration. (Un-necessary)

MPPS: In the process of inspection, notify the PACS server, transmit the current patient data inspection status, respectively there are three states of inspection, In the inspection, inspection end, image transmission end.

Remote IP: Hospital intranet **IP address Port**: Hospital intranet port

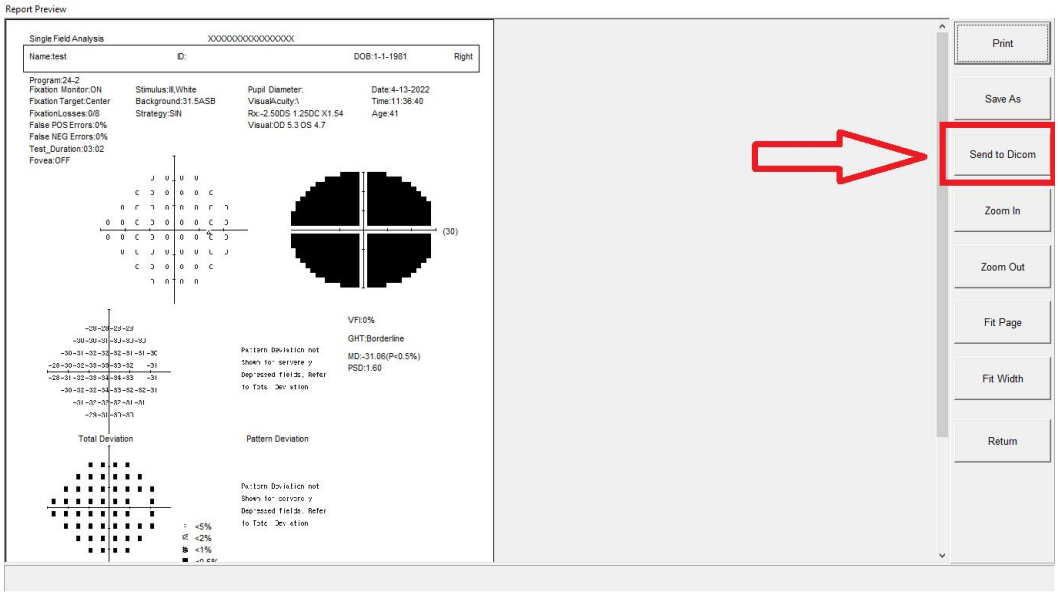
Called AET: Hospital intranet AE title **Local AET**: AE title

Modility: Device Type

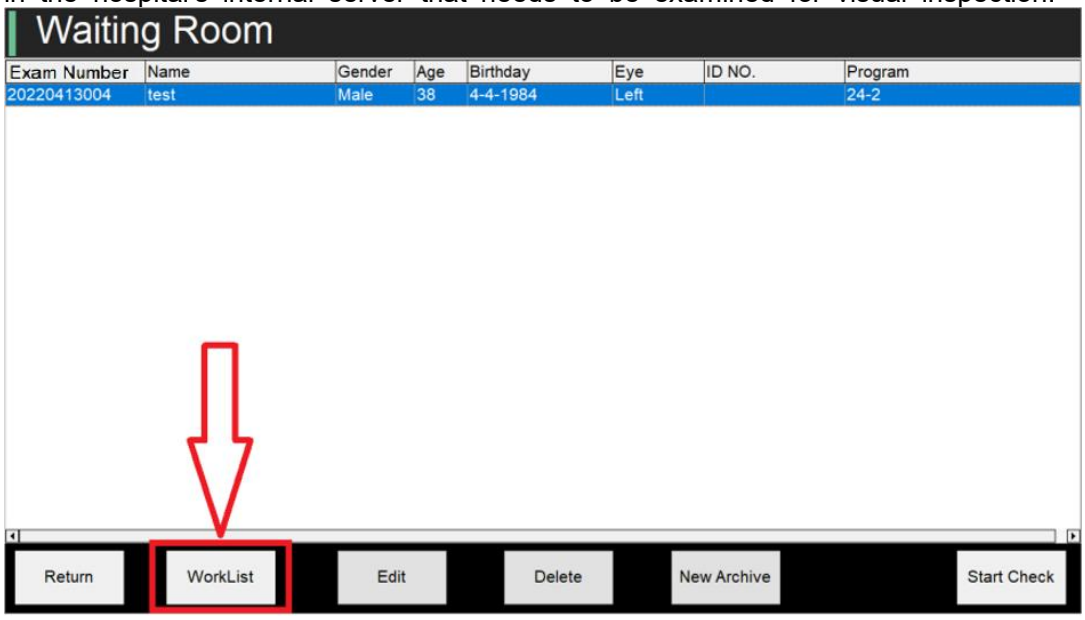


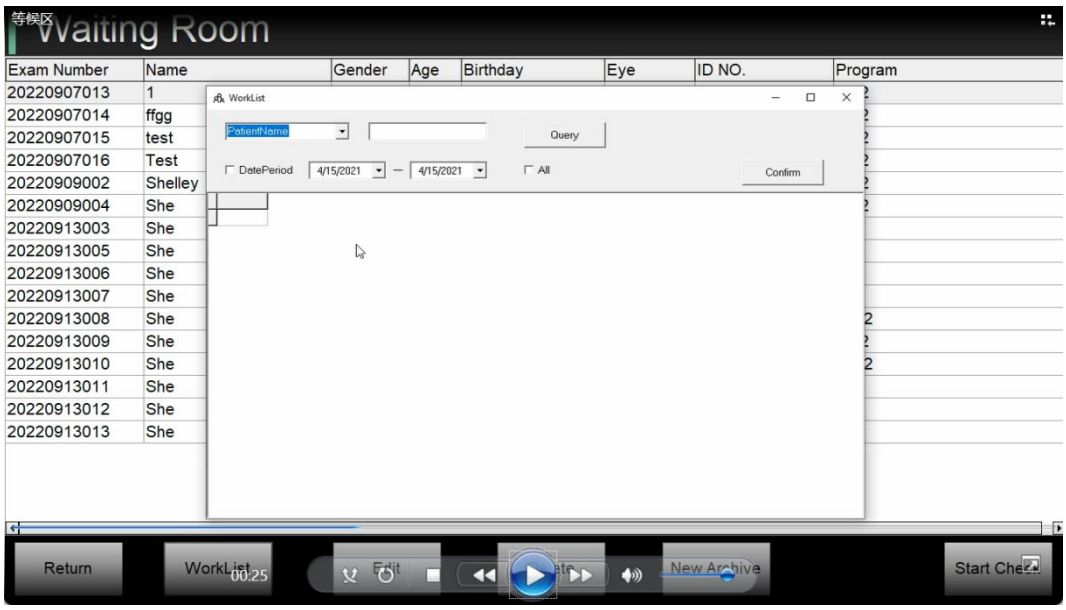
After the setting is complete, firstly click the **Test** button to test whether it is connected to the in tranet, and click **Save** after knowing that the prompt is successful.

After the DICOM setting is successful, click **Send to Dicom** in the report form preview interface to upload the report form to the hospital's internal server.



Click the **WorkList** button on **the waiting Room** to obtain the information of the waiting person in the hospital's internal server that needs to be examined for visual inspection.





6.20 Parameter Setting Interface Introduction

(1) Strategy Introduction: See 6.14
(2) Auto Delay:

On-Default	During testing, the time interval between the appearance of the stimulus varies with the response time of patient who presses the responder after seeing the stimulus (the shorter the response time, the faster the next stimulus appears. Longer response time, next stimulus appears slower. The longest interval between stimulus appears is set by the "Delay time")
Off	During testing, the time interval between the appearance of the stimulus is the time set by the "Delay time"

(3) Delay Time:
The time interval between the appearance of the stimulus.
Unit: ms
If the Auto Delay is On, the interval time between the appearance of the stimulus will appear ac cording to the rule of auto delay.

(4) Center Point Detection（Fovea）

On	After the test starts, the diamond-shaped fixation light below the central fixation point lights up, and the patient's eye are fixed at the diamond-shaped fixation point. The stimulus will be presented in center part which is surrounded by the diamond fixation, to detect the visual acuity of the patient's central vision. After the test completed for central part, the center fixation light will be on, and diamond-shaped fixation light will be turned off. patient will fixed at the central fixation point again to complete the follow-up test.
Off--Default	Without center points test, directly complete the test according to the selected program. No need to turn on for all test, to save test time.

(5) Short Wave Detect

On	Select a part of all the test points for multiple threshold detection. The tested points will have two values shows on report, indicating the deviation of the photosensitivity during visual field inspection, reflecting the patient's consistency of the reaction during the process.
Off--	Without short wave test, directly complete the test according to the selected

Default	program. No need to turn on for all test, to save test time.

(6) Fixation Mode:
Center fixation point, or Diamond fixation points (4 Points) optional.

(7) Fixation Loss Monitor:

On -Default	Eye fixation real-time monitoring. Pupil recognized in center, a filled circle with green color will shows below monitor window. If patient eye deviated from center, a filled circle with red color will shows below monitor window.
Off	Without a filled color circle to show eye status.

(8) Eye Move Alarm Mode:

Alarm Only -Default	While patient eye deviation from Center which means fixation condition not good, there will be a Red Dot shows under the monitoring window to indicating operator and relative voice guidance will broadcast. But test keeps go ahead.
Alarm and Pause	While patient eye deviation from Center which means fixation condition not good, there will be an Red Dot shows under the monitoring window to indicating operator. And test will be paused automatically, need to resume by operator by clicking [Start] icon after re-position patient's eye.

(9) Blind test (Heijl/krakau Blind Spot Monitor):

Tick-on (Default on)	Program will present stimulus to patient Blind Zone while test starting, to confirm position of patient's Blind Zone/optic nerve.
Tick-off	Program will not present stimulus to patient Blind Zone while test starting. Complete the test directly according to the selected procedure. [Fixation loss rate] is invalid, and this index will shows 0/0 in test report

7

Maintenance

In order to obtain better use effect and longer life, environment without interference and correct maintenance method is very necessary.

7.1 Equipment interference sources

Please to avoid or be away from the following sources or to take isolation measures during the machine operation and production :

- The large power electrical facilities, high power wireless transceiver equipment such as big transformer and communication station;
- Moving Vehicle, airplane and big mechanical equipment will interfere with equipment.
- Other medical instruments, especially the radio equipment;
- Other human or natural electromagnetic interference which can't be avoid, such as solar activity and cosmic radiation.

7.2 Maintenance

7.2 .1 You should firstly turn on the power switch of the monitor and then turn on the power switch of the main frame when opening the machine. When closing it, you should firstly log out, and then turn off the power supply of the monitor and the main frame.

7.2.2 Scan disk and arrange pieces in a certain period.

7.2.3 Keep air clean, dry; use air-conditioner if possible

7.2.4 If there is something wrong with the instrument, please contact us immediately or ask the professional engineer or maintainers to maintain.

7.2.5 If the instrument has not been used for a long time, you should supply power for the main frame at intervals. (Usually three times a week, four hours one time)

7.2.6 Clean and Disinfection

7.2.6.1 Cleaning the perimeter bowl: Use clean gauze, clean the perimeter hemisphere by clean water.

7.2.6.2 Disinfection of chin rest, headrest and respond device: Use absorbent cotton, clean and disinfection the chin rest, headrest and respond device by ethanol.

7.2.7 This equipment cannot be used with flammable anesthetic gas mixed with air or flammable anesthetic gas mixed with oxygen or nitrous oxide.

7.3 Preventive inspection and maintenance

When the device is not in use, turn off the power switch and unplug the power plug; when it is not in use for a long time, it is best to power it on once a month for about 10 minutes each time.

For detailed equipment inspection and maintenance, please refer to the equipment manual or accompanying documents.

Note: Please cut off the power supply of the equipment when che  cking.

Additional safety measures during the installation of this equipment: It is strictly forbidden to power on and then connect during installation.

The normal use environmental conditions of the system are consistent with the normal use conditions of the equipment.

Suggestion: In order for users to achieve the best results, the equipment must be installed, operated and used in accordance with the requirements of this manual.

Replacement instructions for replaceable and/or detachable parts that can be damaged during normal use:

The specification of the fuse is φ5×20mm, and the model is T2AL250V. When replacing it, first cut off the power supply, use a screwdriver to remove the back seat of the fuse, and then replace the fuse of the same specification and model.

Responder replacement

⚠The responder provided by the manufacturer should be used, otherwise the minimum safety level will be reduced. If the above parts are damaged, please contact our company for replacement and/or maintenance.

7.4 Manufacturer's responsibility

The manufacturer is only responsible for the impact on the safety, reliability and performance of the equipment in the following situations:

——Assembly, addition, adjustment, modification or maintenance should be carried out by personnel approved by the manufacturer;

——The electrical facilities in the relevant room should meet the requirements in this manual;

——The equipment should be used according to the instruction manual

8

Trouble Shooting

8.1 Introduction to common faults

Symptoms	Cause	Methods
Can't start system or system doesn't work	COMS lost	Reset COMS
	Voltage isn't enough or too high	Replace power
	Infected virus	Use anti-virus software to scan virus
	Crashes while working or show that the program is wrong	Open too many application programs, re-start the PC
	Hard disk is damaged	Replace Hard disk
Nothing show on screen when power on	LCD do not connected well	Connect the power well and all connections
	LCD Malfunction	Replace
Responder does not work	Connection wire is damaged	Soldering or replace the relevant cables
	Press button is damaged	Replace the pressing key or whole responder

	The controlling card in the perimeter does not work	Replace or maintain controlling card
Video Eye Monitor going to black or appears snow pattern	Connection cables may loosen	Check and re-connect all related cables
	2860 capture card failure	Replace 2860 capture card
	Camera failure	Replace camera module
All patient visual field with same defect at same visual field area	LED light malfunction	1. Stimulus troubleshooting by relevant programs. (See below the introduction of Stimulus troubleshooting programs) 2. Ironing the relevant connections or do replacement of LED bulb, or replace the hemisphere bowl of Perimeter.

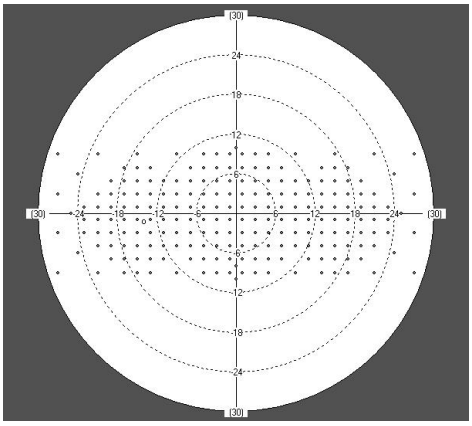
8.2 Stimulus troubleshooting Programs

8.2.1 Stimulus Troubleshooting-Middle

Main applications : Stimulus troubleshooting use

Main applications : 0° ~ 30°

Test points : 213 dots

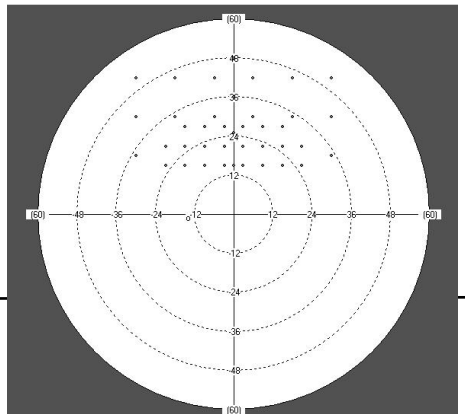


8.2.2 Stimulus Troubleshooting-Upper

Main applications : Stimulus troubleshooting use

Main applications : Upper 0° ~ 60°

Test points : 40 dots

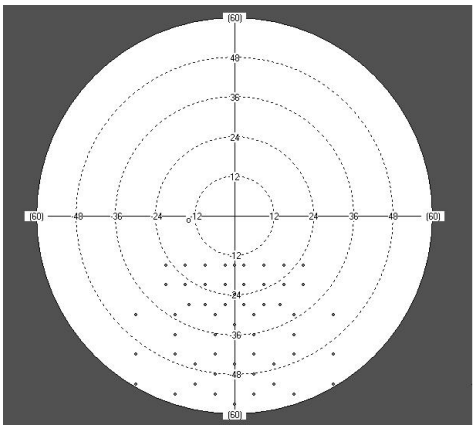


8.2.3 Stimulus Troubleshooting-Lower

Main applications : Stimulus troubleshooting use

Main applications : Lower 0° ~ 60°

Test points : 55 dots

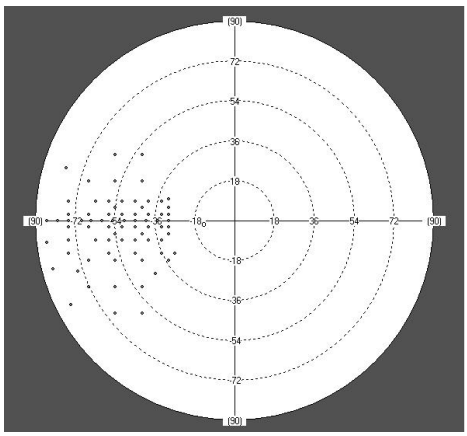


8.2.4 Stimulus Troubleshooting-Right

Main applications : Stimulus troubleshooting use

Main applications : Right 0° ~ 90°

Test points : 74 dots

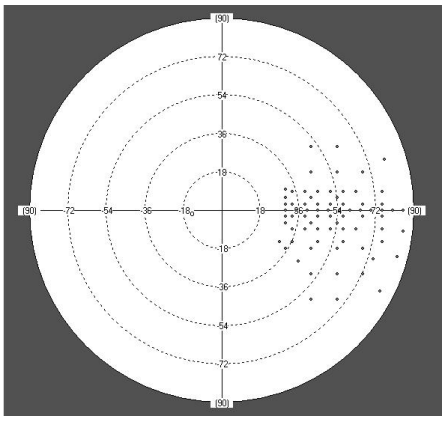


8.2.5 Stimulus Troubleshooting-Left

Main applications : Stimulus troubleshooting use

Main applications : Left 0° ~ 90°

Test points : 74 dots



For how to use this programs, please turn to Service Manual.

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EMC INFORMATION

Appendix A EMC GUIDANCE

This product complies with EMC test standard IEC 60601-1-2.

*** This EUT is ranged to the Group 1 Class A apparatus according to the standard of CISP R 11.**

*** The requirement of Radiated Emission is fulfilled. Band width: 120kHz. Frequency range: 30MHz to 1000MHz.**

*** The requirement of conducted disturbance is fulfilled. Band width: 9 kHz. Frequency ran ge: 150 kHz to 30 kHz.**

Table 1 Compliance level of Radiated, Radio-frequency, Electromagnetic field

Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum power (W)	Distance (m)	IMMUNITY TEST LEVEL (V/m)
385	380 –390	TETRA 400	Pulse modulation 18 Hz	1.8	0.3	27
450	430 – 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	2	0.3	28
710 745 780	704 – 787	LTE Band 13, 17	Pulse modulation 217 Hz	0.2	0.3	9
810 870 930	800 – 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	0.3	28
1720 1845 1970	1 700 – 1 990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	2	0.3	28
2450	2 400 – 2 570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0.3	28
5240 5500 5785	5 100 – 5 800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0.2	0.3	9

Table 2 Compliance level for electromagnetic immunity

Immunity test	Compliance
Electrostatic discharge (ESD) IEC60601-1-2	± 2 kV, ± 4 kV, ± 8 kV, ± 15kV for air discharge. And ± 8 kV for contact discharge.
Radiated RF IEC60601-1-2	80MHz-2.7GHz 10V/m 80%AM at 1kHz
Electrical fast transients/ Burst IEC60601-1-2	± 2 kV for a.c. power lines
Surge IEC60601-1-2	± 0.5 kV & ± 1 kV for a.c. power lines to line(s); and ± 0.5 kV & ± 1 kV & ± 2 kV for a.c. power lines to grou nd
Conducted Disturbances induc ed by radio-frequency fields di scharge IEC60601-1-2	0.15MHz-80MHz 3Vrms 6Vrms in ISM bands between 0,15 MHz and 80 MHz 1) 80%AM at 1kHz
Power frequency (50/60 Hz) magnetic field IEC60601-1-2	30(A/m)
Voltage dips and Interruptions IEC60601-1-2	5%UT (>95%dip in UT) 2) for duration 0.5 5%UT (>95%dip in UT) for duration 1 70%UT (30%dip in UT） for duration 25 70%UT (>30%dip in UT) for duration 30

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SERVICE INFORMATION

Repair: If the problem is not solved in spite of the settlement according to the contents of chapter 7, please contact to Huvitz's agent with the information on the following items.

1.1 Name of Equipment Type: Automatic Perimeter HVF-100
1.2 Typical No.of Equipment: Typical number consisted of 8 digits and characters written on its name plate.
1.3 Explanation on its symptom: Description in detail.

Supply of parts required for repair:

1.4 The preservation period of parts required for repair of this machine is by seven(7) years after man ufacturing the product.

Parts to be repaired by qualified service manpower:

1.5 User should not replace parts by him or herself. Please contact to Huvitz`s agent for the replacem ent if these parts are consumed enough or degraded by the longtime use.

1.6 If any serious incident that has occurred in relation to the device, it should be reported to the m anufacturer

and the competent authority of the Member State in which the user and/or patient is established.

■ **How to Contact Huvitz Co., Ltd.**

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