Automatic Perimeter

China Care Medical Equipment Co.,Ltd
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foreword

Dear users:

Thank you for choosing to use the computer vision instrument，Thank you very much. In order to use the instrument properly, please read the instruction carefully before using it.

Manufacturer's commitment:

When using this product, if the user needs to specify the circuit diagram, component list and other relevant information of repairable equipment parts required by our company, please contact us.

Replacement parts: all parts required by this product, such as display screen, fixed light and jaw bracket, can only be provided by our company. If users use parts not provided by the company, it will reduce the minimum safety degree and cause adverse consequences, the responsibility shall be borne by the user himself.

If you have any unclear or objection to any content or terms of this manual, or if you encounter technical problems during the use of the instrument, you are welcome to contact our company.

warning

Please read the instruction carefully before use. Do not use in flammable and explosive environment.

Indoor use only; Do not dial the probe plug during the collection process;

Do not splash liquid or other debris into the equipment; Do not place parts of this equipment on the ground;

When cleaning the equipment, the ac power must be disconnected from the equipment;

Fuses whose rated current is consistent with the specifications must be used;

The company shall not open the equipment shell without permission of the company, otherwise the company shall not be responsible for any adverse consequences;

In case of failure that cannot be fixed by yourself, please contact the supplier or manufacturer.

In handling, installation and working condition, do not put the instrument upside down or do strenuous exercise to avoid damage to the instrument.

I overview

1. EQUIPMENT INTRODUCTION

BIO-1000 plus fully automatic computer vision instrument absorbs the advantages of international advanced models, integrates sound, light, machine and electrical technologies, adopts large-scale integrated circuit design, adopts projective working mode, adopts international general random detection mode for visual marking, and has a wide range of inspection (0-90°). The use of high-end computer configuration, compared with domestic similar products stability, reliability higher. Support Windows XP, WIN7 platform, beautiful software interface, easy to operate, easy to learn and use. Comprehensive software inspection program and multiple report analysis according to international standards to provide auxiliary diagnosis for diseases related to visual impairment.

2. INSTRUCTIONS

2.1 for your safety and interests, please read the product manual and all the attached materials carefully before using the device. If you fail to use and operate the equipment in accordance with the product instructions, which results in any personal injury, property or other loss, chongqing beo new vision medical equipment co., LTD will not assume the responsibility.

2.2 the instrument can only be installed in a dark room and used by trained operators.

2.3 the voltage at the location of the equipment must meet the voltage required by the company. If the voltage is not stable, please equip yourself with voltage stabilizing equipment. The company will not assume the responsibility for the problem of the equipment caused by the voltage.

2.4 the equipment should be placed in a dry place in order to avoid being damaged by the environment (moisture, dust, liquid, direct exposure to sunlight, etc.). Please do not splash liquid or other debris into the equipment, or it may cause short-circuit of the internal components of the equipment and cause electric shock or fire.

2.5 the shell of the equipment shall not be opened without permission of the company, otherwise the company shall not bear the consequences.

2.6 in order to better maintain the equipment, if it needs to be turned on again after the power is turned off, wait for 5 seconds and 15 seconds for the computer part.

2.7 the medical electrical equipment of this device is the host and field stimulator, which are suitable for use in the environment of patients.

2.8 keep a distance of 20 m or more away from TV, radio and other electrical equipment to avoid possible electromagnetic interference.

2.9 terms of environmental protection: when the equipment or components in the system are damaged or have reached the end of their service life, they may be arbitrarily discarded, which may cause environmental pollution, so they shall be recycled or scrapped according to local laws and regulations.

Product specifications (hereinafter referred to as "specifications")

Please refer to the actual product.

If you have any doubt or objection to any content or provision of the instruction manual, or if you encounter any

technical problems during the use of the instrument, please call 023-65456668

Chongqing beo new vision medical equipment co., LTD reserves the right to interpret and modify the manual.

3. System configuration

A) visual field instrument hardware consists of computer automatic visual field instrument host, wireless keyboard and wireless mouse.

B) the software of visual field instrument (system) consists of the following modules:

Patient information input module;

Data analysis and processing software module;

File management module;

Output print module.

C) computer and operating system configuration requirements

CPU: Intel 1620 or above;

Memory: 512m or more;

Hard disk: more than 300 gigabytes;

Monitor: above 15 ";

Graphics card: integrated graphics card;

Operating system: Windows 7 and above.

4. Scope of application

It is applicable to evaluate the poor light sensitivity of visual field by subjectively detecting the presence of test stimulus in a certain background.

5. caution

Precautions: please ensure the equipment is reliably grounded when using. In order to avoid damage caused by bad environment (moisture, dust, liquid, direct exposure to sunlight, etc.), the equipment should be placed in a clean and dry place. Please do not splash liquid or other debris into the equipment, or it may cause short-circuit of the internal components of the equipment and cause electric shock or fire.

6. Scope of application

This product specification model: BIO-1000 plus

Basic parameters: this device is a static visual field meter with sphere radius of 300 mm. The background light color is white (10 CD /m2). Stimulus light source color: white (background light is white). Stimulus for III point size.

7. Product features

Fuse element: fuse type T2AL250V.

Classification according to prevent electric shock type: I class.

Classification by degree of protection against electric shock: type B application section.

According to the level of protection of the liquid into the classification: ordinary equipment.

Classification by degree of safety for use in the case of flammable anesthetic gas mixed with air or in the case of flammable anesthetic gas mixed with oxygen or nitrous oxide: no

Equipment used in the presence of flammable anesthetic gas mixed with air or with oxygen or nitrous oxide.

Classified by operation mode: intermittent loading and continuous operation.

Voltage and frequency range: supply voltage a.c.220 V, frequency 50 Hz.

Input power of the equipment: 300 VA.

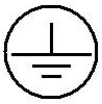
Whether the equipment has the application part of protection against defibrillation discharge effect: none.

Whether the device has a signal output or input portion: there is a signal output portion.

Permanent installation equipment or non-permanent installation equipment: non-permanent installation equipment.

Description of external marking of instrument:

 caution

 connect earth

 B applied part

 connect （responder）

 disconnect （responder）

 power switch on

○ power switch off

 USB

 Responder connect port

 High temperature caution

II. Technical introduction

1. technical indicators

Background brightness and test stimulus brightness of the product are measured at the position of the pupil of the patient's eye.

1.1 background brightness

Background light: white with backlight intensity of 10 CD /m2.

1.2 test stimuli are within the tolerance range specified in table 1.

1Parameter of stimulus

NO.	Content	Tolerance	
1	Background light， L_B	+25%，-20%	
2	Contrast ， $\Delta L/L_B$	Background white，stimulus white	Tolerance +25%，-20%
3	Stimulus position	0°～10°：≤0.5°	
		10°～30°：≤1°	
		＞30°：≤2°	
4	Stimulus size	Point angle：+20%，-15%	
5	Interval time	200ms， ±20%	
6	Scope of background	Most of the peripheral stimulus points do not exceed 2° beyond the boundary	
7	Stimulus shape	The ratio of the short axis length to the long axis length of the stimulus points is shown in table 2	

Stimulus size

Azimuth θ	Eccentric Φ		b/a	Point angleΩ
4°	15°		>0.7	6.66E-05
0°	40°		>0.6	1.00E-04
45°	13°		>0.7	8.00E-05
	40°		>0.5	1.29E-04
72°	3°	I	>0.7	2.50E-06
		II	>0.8	1.10E-05
		III	>0.8	6.50E-05
		IV	>0.8	2.14E-04
		V	>0.8	6.50E-04
90°	13°		>0.7	8.44E-05
	40°		>0.6	1.10E-04

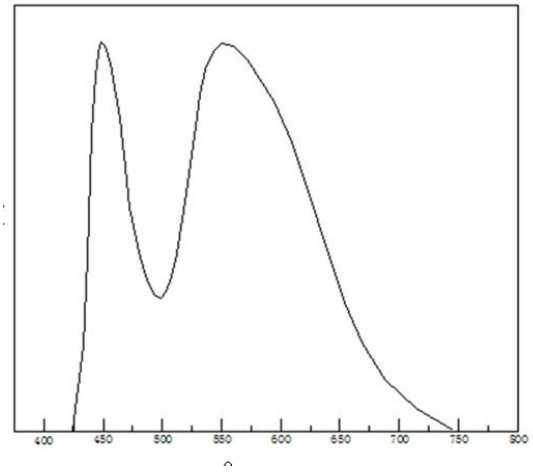
135°	13°	>0.7	6.66E-05
	40°	>0.6	1.15E-04
176°	15°	>0.7	6.22E-05
175°	40°	>0.6	9.00E-05
225°	13°	>0.7	6.50E-05
	40°	>0.6	7.99E-05
281°	13°	>0.7	6.30E-05
280°	40°	>0.6	7.20E-05
315°	20°	>0.7	6.50E-05
	40°	>0.6	9.20E-05

3 stimulus contrast parameter

dB	Stimulus lihgt $L_s - L_B$ $\mathbf{cd}/m^2$	light L_s $\mathbf{cd}/m^2$	Contrast light $(\mathbf{L}_s - \boldsymbol{L_B})/\boldsymbol{L_B}$
0	3185.0	3195.0	318.50
1	2530	2540	253.00
2	2010	2020	201.00
3	1596	1606	159.60
4	1268	1278	127.80
5	1007	1017	100.70
6	800	810	80.00
7	635	645	63.50
8	505	515	50.50
9	401	411	40.10
10	318.5	328.5	31.85
11	253	263	25.30
12	201	211	20.10
13	159.6	169.6	15.96
14	126.8	136.8	12.68
15	100.7	110.7	10.07
16	80	90	8.00
17	63.50	73.50	6.35
18	50.5	60.5	5.05
19	40.1	50.1	4.01
20	31.85	41.85	3.38
21	25.30	35.30	2.53
22	20.10	30.10	2.01
23	15.96	25.96	1.59
24	12.68	22.68	1.26
25	10.07	20.07	1.00

26	8.00	18.00	0.80
27	6.35	16.35	0.64
28	5.05	15.05	0.51
29	4.01	14.01	0.40
30	3.19	13.19	0.32
31	2.53	12.53	0.25
32	2.01	12.01	0.20
33	1.60	11.60	0.16
34	1.27	11.27	0.13
35	1	11	0.1
36	0.8	10.8	0.08
37	0.64	10.64	0.06
38	0.50	10.50	0.05
39	0.4	10.40	0.04
40	0.32	10.32	0.03

1.3backgroud and stimulus light spectrum



1.4 Stimulation range: full field of vision 90°. The centrifugal Angle of the minimum test stimulus points conforms to the requirements in table 5

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4 Minimum stimulus pattern range

The project content	ϕMinimum test stimulus point centrifugal Angle
Nasal side	45°
bitamporal	70°
Upside	45°
Down side	60°

During the test, the nasal side minimum pattern range is recommended to be performed in the nasal side step screening test mode, the temporal side minimum pattern range is recommended to be performed in the full field 135 screening test mode, and the upper and lower minimum pattern is recommended to be performed in the peripheral 60-4 threshold test mode.

1.5 number of stimulus sites and stimulus time:

A) number of stimulus positions: controlled by the program, the minimum number of stimulus positions shall not be lower than the requirements in table 5.

5 Minimum number of stimulation sites in the patient

Centrifugal Angle ϕ	Minimum number of stimulation sites in the patient
0°～25°	60
＞25°～50°	30
＞50°～70°	15
Total	105

1.6 visual distance between the position of the pupil and the fixed target: 300 mm±10 mm.

1.7 the instrument has sufficient head positioning position, and is equipped with movable jaw bracket and forehead bracket. The left and right stroke of both of them is ≥30 mm, and the upper and lower stroke of jaw bracket is ≥50 mm.

1.9 the instrument is equipped with automatic light intensity calibration. Each time the machine is started, the background light intensity and stimulus light intensity will be automatically corrected.

1.13 input power: 300 VA.

2. inspection principle

By checking the sensitivity of the human eye to light, the automatic computer visual field instrument can check the pathological changes of optic nerve, retina, optic circuit and other tissues. The external light passes through the refractive system to the retina, forms the biological electricity through the retinal photochemical reaction, transmits

to the visual cortex through the visual path, and forms the vision through the comprehensive analysis of the brain. From the distribution and direction of the nerve fibers from the retina to the optic cortex, it can be known that the lesions in any part of the optic road must be reflected in the visual field. According to the changes in visual field and other clinical examination results, the location and nature of the lesions can be analyzed.

III Instrument installation instructions

1 hardware introduction

BIO-1000 plus automatic computer vision instrument has been strictly inspected and tested before leaving the factory. After receiving the instrument, please check whether the accessories are in good condition according to the equipment list. If any abnormality is found, please contact the equipment supplier immediately.
Main accessories see accessories list

2 operating environment

Ambient temperature: 5℃-40℃
Relative humidity: ≤85%
Atmospheric pressure range: 760 hPa ~ 1060 hPa
Power supply: a.c.220V; Frequency: 50 hz
Input power: 300VA

3 installation environment

In order to ensure the safe and stable operation of the equipment, please ensure a good installation environment:
(1) the equipment must be installed on a flat table without slope.
(2) the equipment must be installed in a clean, quiet and dry environment.
(3) the equipment shall be installed in a dark room with a luminance of no more than 10 lx 1 meter away.
(4) special ground wire shall be installed for the equipment.

4 hardware installation

(1) remove and place the main device.
(2) the mouse and keyboard are connected to the computer host.
(3) connect the printing device.
(4) connected to the power supply cord, will take the portable isolation transformer porous plug from the power source of the matching of auxiliary network outlet (see the power of soft wire (2) soft wire connected, and respectively connected to the printer, the stimulator power input pin, then the power of soft wire (see the power of

soft wire (1)) will net power portable with isolation transformer and porous socket connection.
The equipment is a split-type instrument. The installation and use of hardware and software are synchronized with this manual.

software description, installation and uninstallation

1 software name: automatic computer visual field instrument V1.0

2 version number and date

Software version no. : V1.0

3 software provider

Name of operating software provider: chongqing beo new vision medical equipment co., LTD

Address of operating software provider: no.1-10, 9th floor, office building no.4, 2N group, fulicheng zhihui international phase 2 project, shapingba district, chongqing

4 software support

Chongqing beo new vision medical equipment co., LTD provides technical support, provides software operation training for software users, and continues to upgrade and optimize the operating software.

5 software application backup

After data collection by the software, data needs to be backed up. All data should be saved in the software installation folder, and the contents of the entire installation folder can be backed up.

Note: the system software is installed in the "D:\ Vision" directory by default.

6 software maintenance

After the software configuration is completed, there is basically no need for maintenance. When there is a new software that needs to be upgraded, it is enough to re-install the new software. A virus, serious misoperation, or hardware system failure can damage a device's software system. If the software system is seriously damaged, please follow the following steps to reinstall the software system:

To install an operating system on a computer, we recommend Windows XP (32-bit), Windows 7 (32-bit) and above. If they are not automatically identified during installation, you can install their drivers manually. These drivers are located in the factory file of the computer E disk. Install 2860 video acquisition driver, the driver is located in the factory file E disk 2860 acquisition card driver directory.

7 software installation

If you need to install vision software, the default is in D:\ factory file \ vision software folder;

Copy the Vision program to the D root directory.

IV. Operation instructions

1. Introduction to software functions

(1) field detection module

The main module completes field inspection, statistical analysis, storage and printing of results.

(2) file management module

Complete file block search, call, print and delete functions.

2 software shutdown and startup

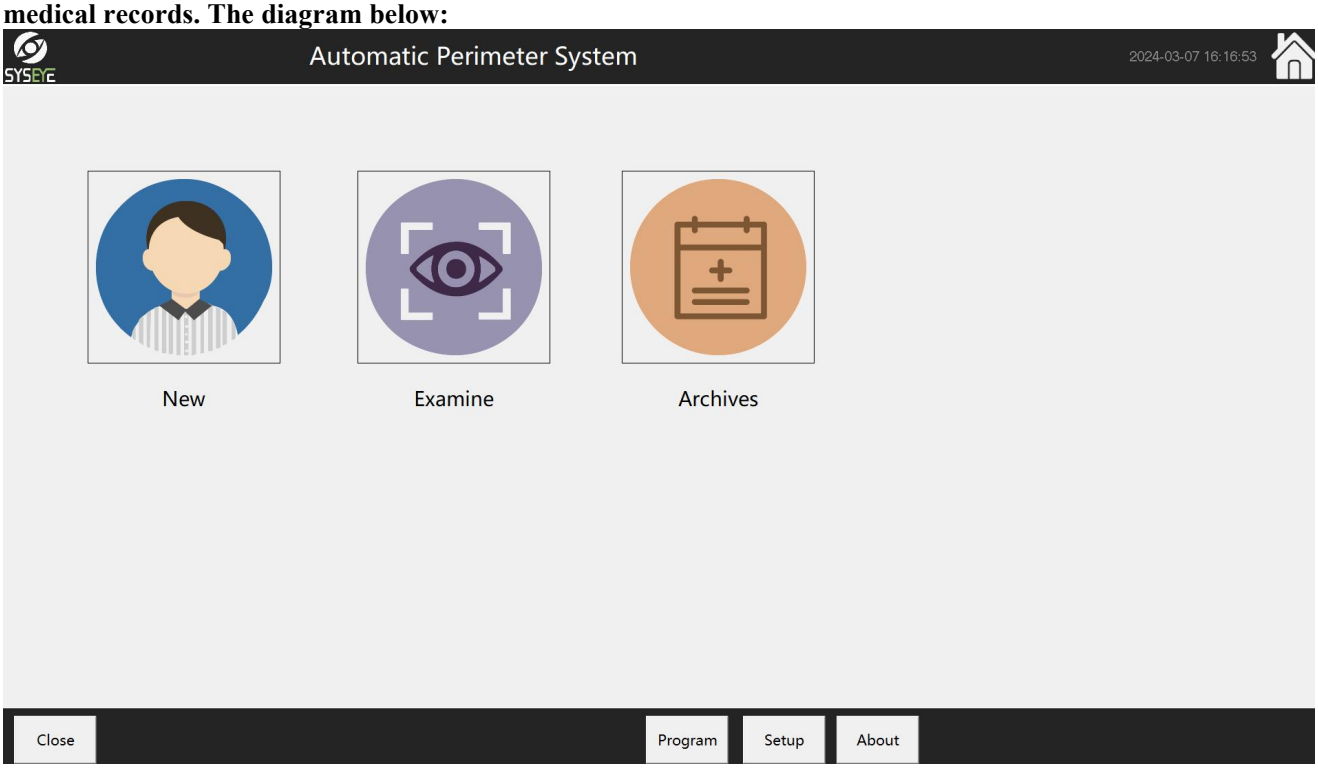
（1）open software：double click  he interface and enter system 。

（2）close software：click the right upside  。

3 operating system introduction

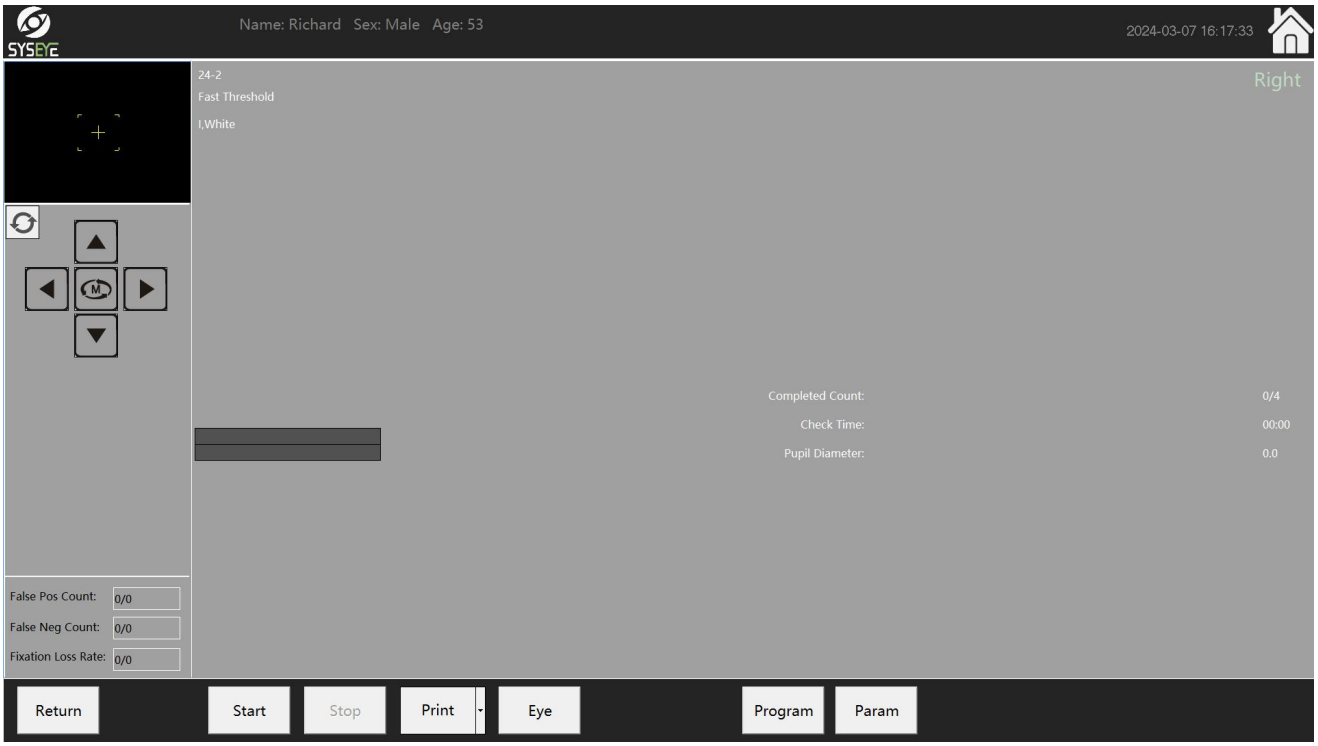
This software system mainly divides into the homepage, the inspection, the custom procedure, the print, the maintenance and about 6 main interfaces.

Main interface: the main interface is used for users to create new patient information and query historical medical records. The diagram below:



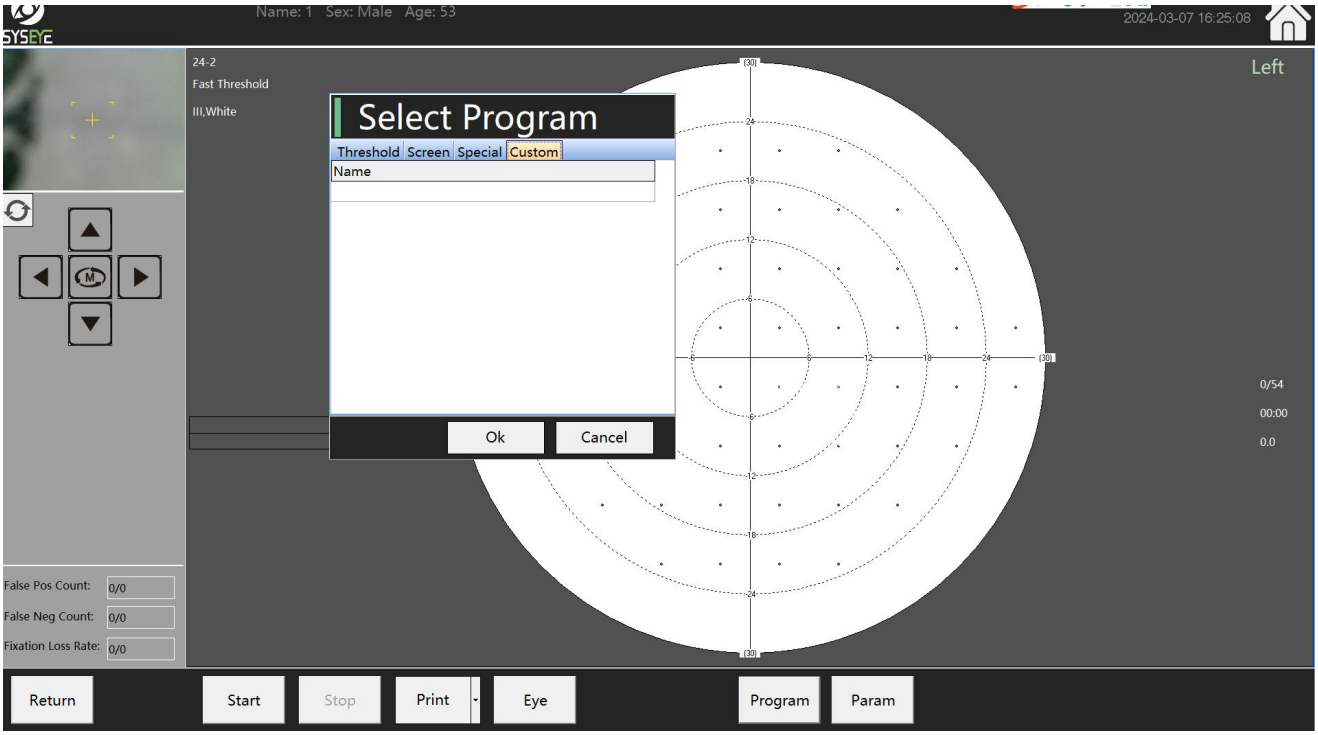
The main interface

Test interface: you can select the examination program to test the patients and store the test report, or modify the test method. The diagram below:

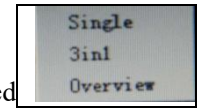


Test interface diagram

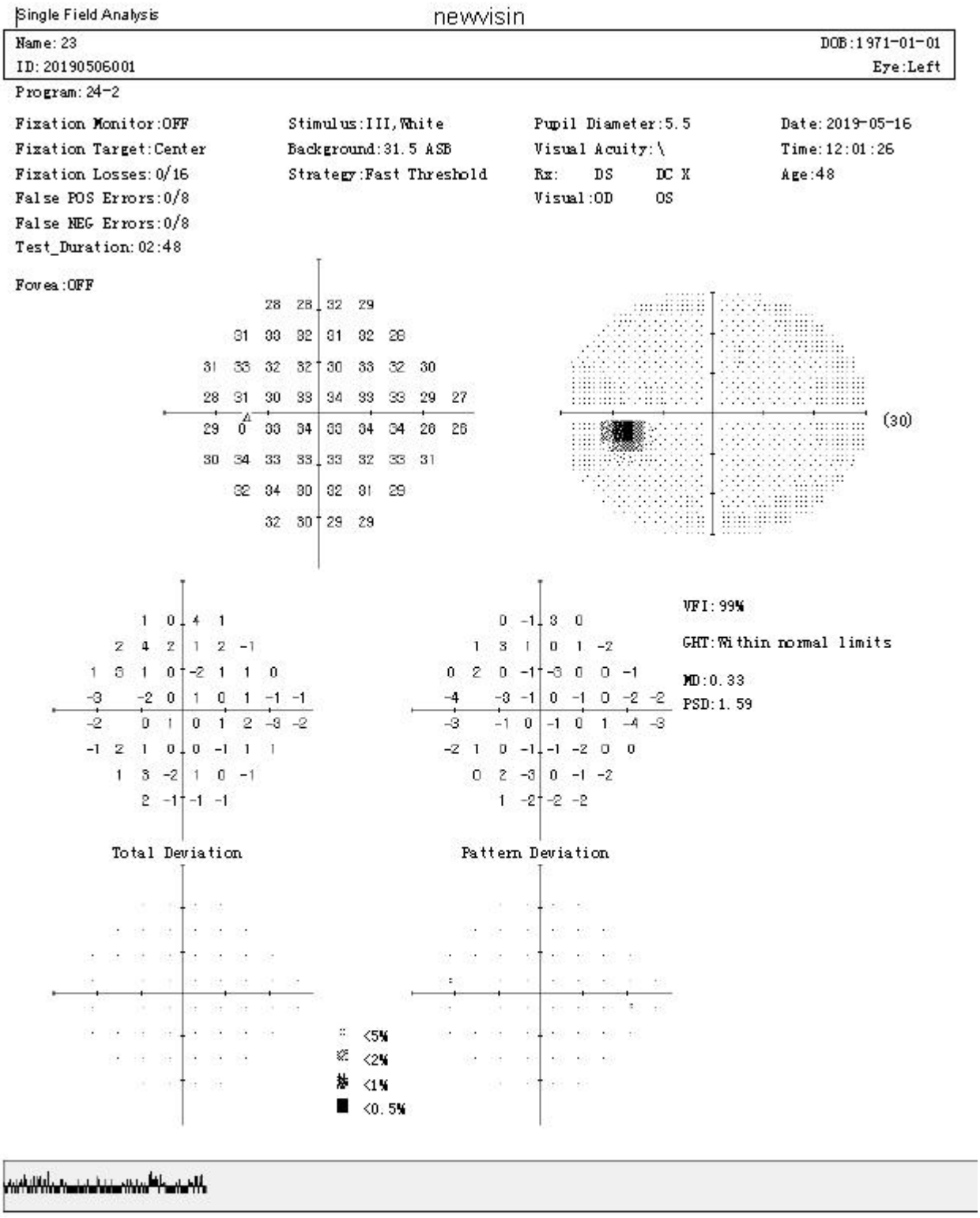
Custom program interface: for users to create new test programs according to their own requirements. The diagram below:



Custom program interface diagram

Print interface: users can click the black triangle as needed 

and as follow


Single Field Analysis
newvisin
Name: 23
DOB:1971-01-01
ID: 20190506001
Eye:Left
Program: 24-2
Fixation Monitor:OFF
Stimulus:III,White
Pupil Diameter:5.5
Date:2019-05-16
Fixation Target:Center
Background:31.5 ASB
Visual Acuity:\
Time:12:01:26
Fixation Losses:0/16
Strategy:Fast Threshold
Rx: DS DC X
Age:48
False POS Errors:0/8
Visual:OD OS
False NEG Errors:0/8
Test_Duration:02:48
Fovea:OFF
(30)
VFI:99%
GHT:Within normal limits
MD:0.33
PSD:1.59
Total Deviation
Pattern Deviation
<5%
<2%
<1%
<0.5%
Diagnosis:
Doctor:

Interface

4 operation

Input patient information---check ---printer report

5 the prepare work before checking

(1) disposable medical absorbent cotton gauze blocks are provided for the visual field stimulator, jaw bracket, forehead bracket and responder to touch the patient's parts; After check, change gauze to be used next time.

(2) understand the patient's vision. If the visual acuity is less than 0.1 or the fixed visual acuity cannot be clearly seen, the visual acuity will be affected during the examination and the examination results will be inaccurate. Therefore, it is necessary to use the corrective mirror to correct the visual acuity.

(3) cover client with eye mask.

(4) before the examination, the examinee should be taught how to look fixly, how to respond, and how to rest when tired. Note: the fixed point is the yellow indicator light at the center of the sphere.

5) ask client to place his chin on his chin rest, his forehead against the beam, his head straight, and his eyes fixed on the fixed light straight ahead.

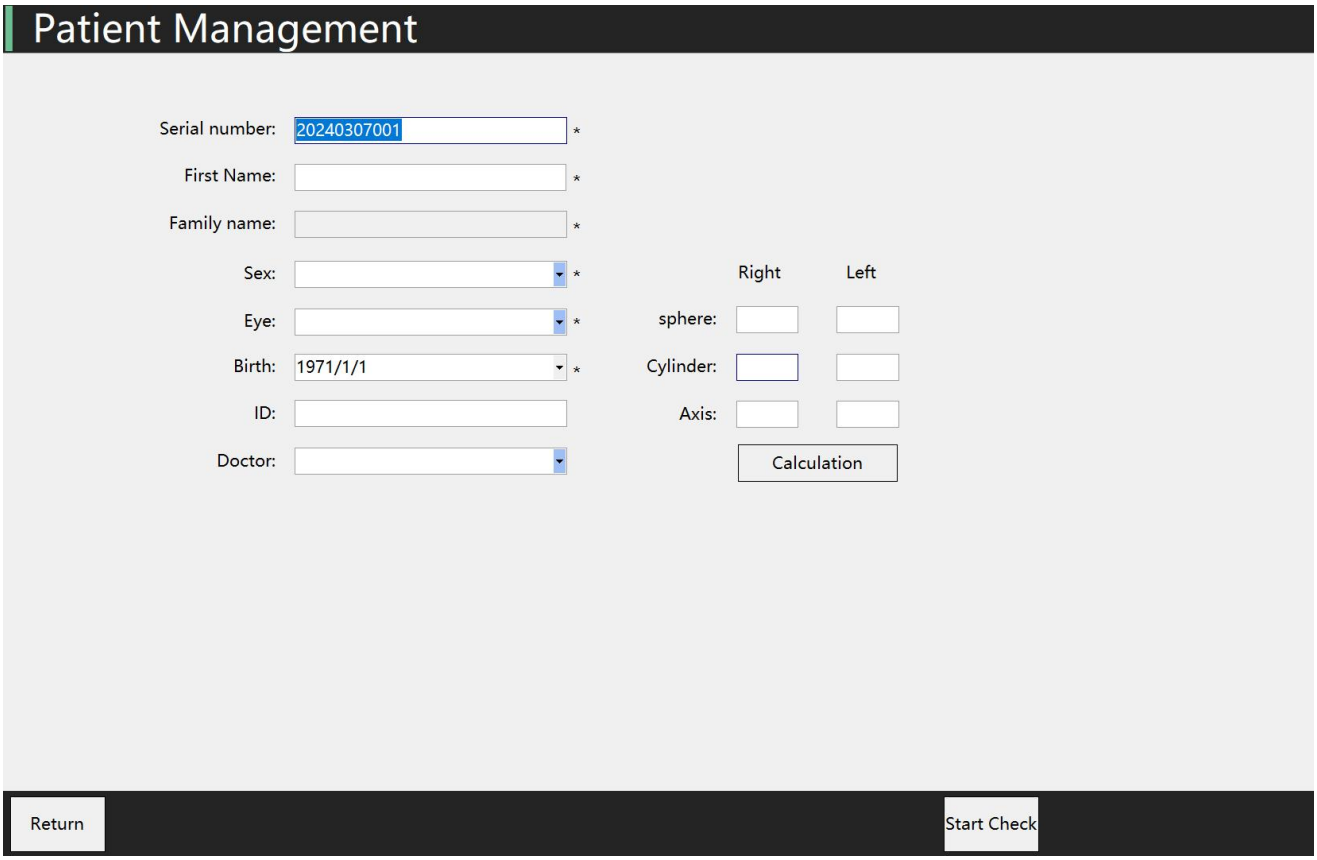
(6) before inspection, teach the examinee: during the inspection, if you feel a bright spot flashing around, please press the button with your hand and release it immediately. At this time, you will hear "beep", and the inspection of a light spot will be completed. And so on to complete the entire check.

(7) before examination, teach the client: the head should not move and the eyes should not move. If your eyes are tired, you can blink or hold the responder down with your hand to pause the inspection, then close your eyes for a rest and release the button to continue the inspection.

6 operation step

6.1 new patient information

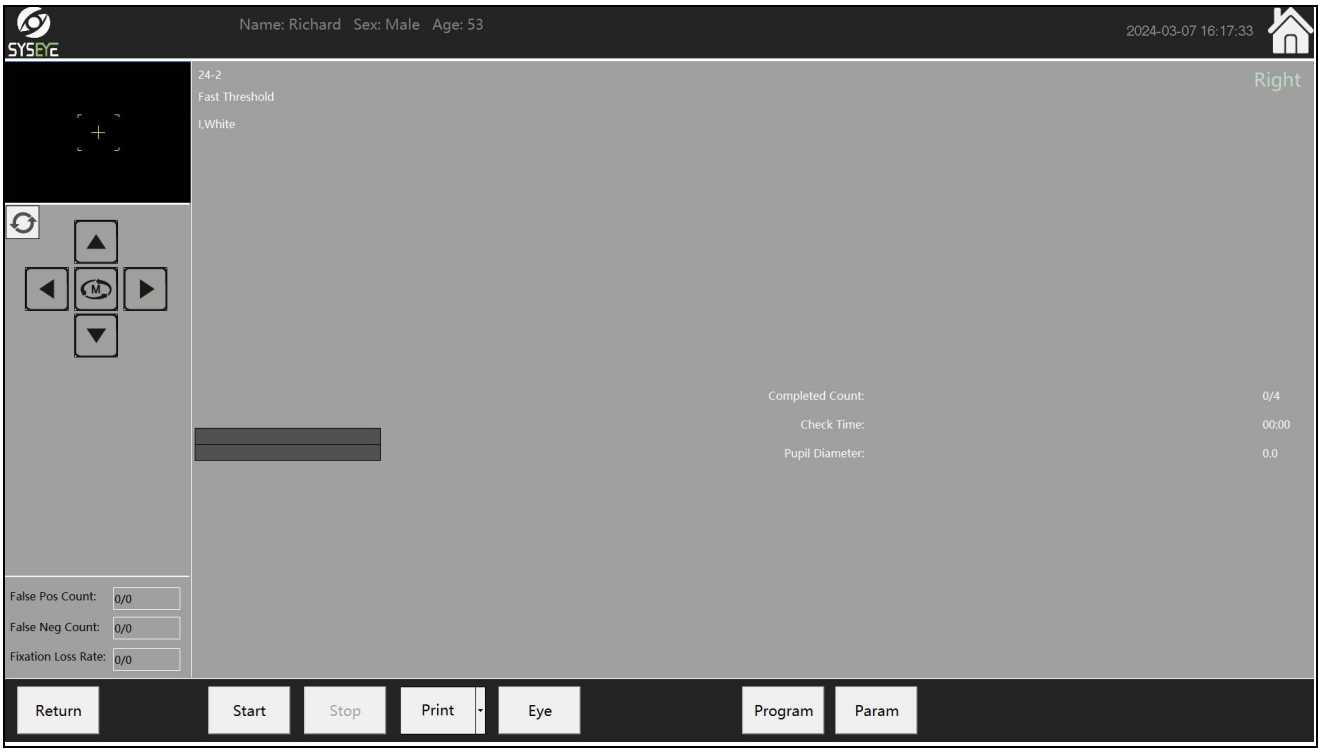
Click "to be examined" on the main interface to enter the dialog box of patient information input. The diagram below:



(1) in the above dialog box, patient number, name, date of birth, gender and eye sex are mandatory items. Other information can be determined by the operator according to his/her needs;

(2) after input, click the "save" button at the bottom right, and the patient's information will appear in the left area to be tested. After the patient's test report is saved, the patient's information in the area to be tested will disappear automatically. Each input to complete a patient information and then click the "save", the quarantine will add a file to be detected, click the "continue to input" can continue to enter another patient information, stay after completion of the test to choose another patient files and waiting for inspection area and then click the button to enter the next test.

（3）Click the "enter test" button to enter the test interface：

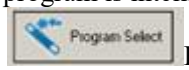


test report

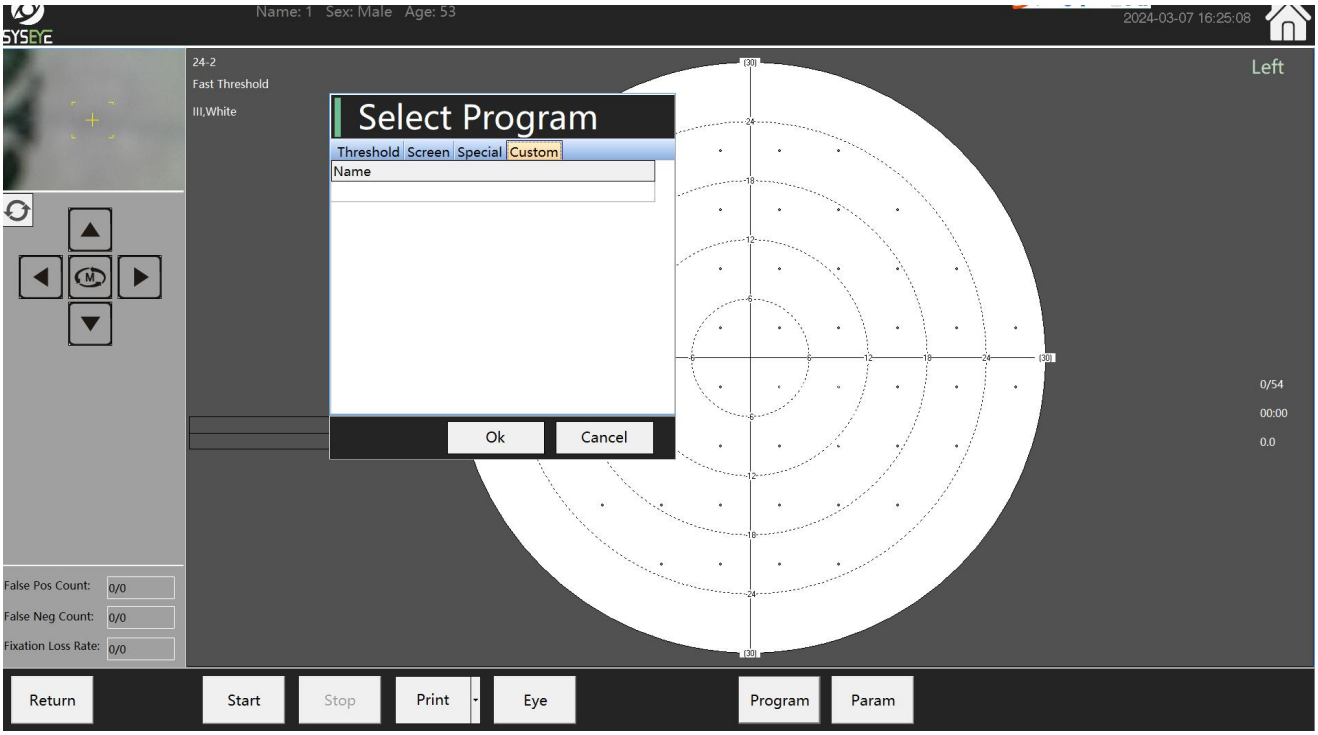
6.2 adjust eye position:

The operator clicks the gills drag controller with the left mouse button according to the eye position monitoring window of the subject's eye position  Subject's eye position can be adjusted up and down, so that the center of the pupil is opposite to the center of the cross on the monitoring window.

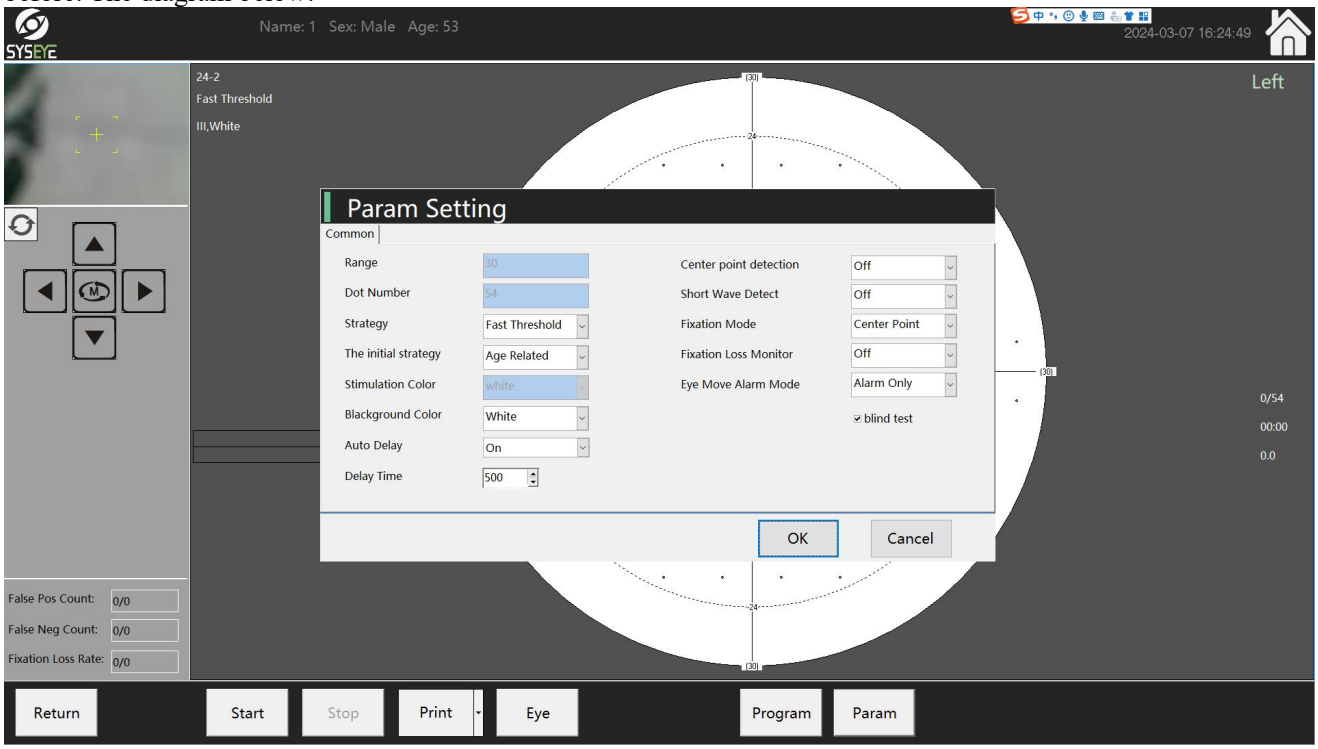
6.3 program Settings: When the eye position adjustment is complete, click on the right 

test Button to start the test. The default test program of the system is "30-2" program, and the default strategy of "30-2" program is intelligent dynamic strategy. If users want to change the test program, please click the right 

Button "change program". The fixed program can be divided into six categories: threshold program, screening program, special program and custom program, dynamic program and dynamic custom program. Users can choose according to their own needs. The diagram below:



If the user wants to modify the default parameters of the test program, please click the "parameter setting" button on the right. At this time, "parameter setting" is to modify the default parameters of the program we selected before. The diagram below:



6.4 pause and stop functions:

If the test needs to be suspended in case of any abnormal situation during the test, the operator may click the "stop test" button or if the subject is tired and needs a rest, the test can be suspended by holding down the responder without releasing it. The test can continue after the condition recovers. Or click the "stop test" button to directly stop the test and restart the test after the condition is restored.

6.5 test results preservation and other eye test:

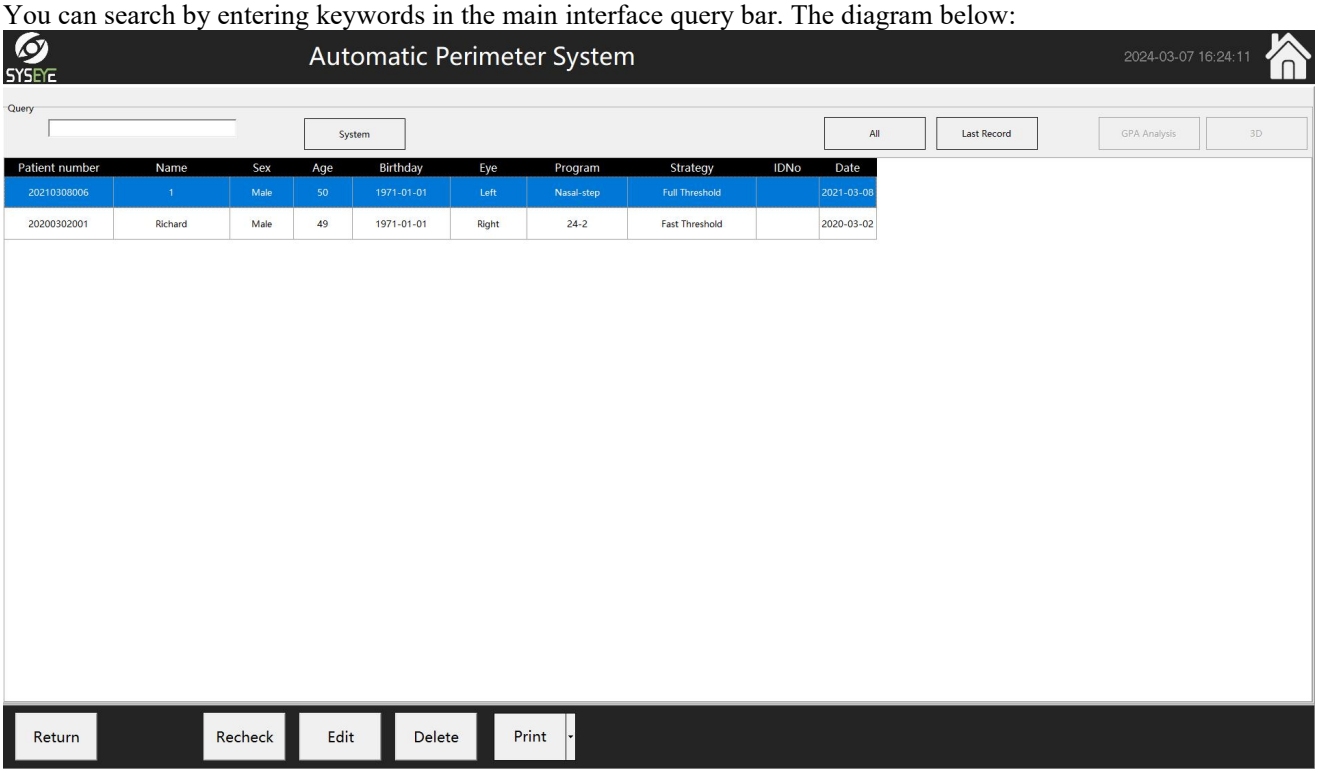
After the test is completed, click the "save report" button to save the test results. If it is necessary to test the other eye of the subject, click the "switch eyes" button and repeat the previous operation.

6.6 printing of report form:

After saving the test results, click "print" to preview the report form of this test, preview the format of the report form in the preview interface, and print the report form in this way in the determined format.

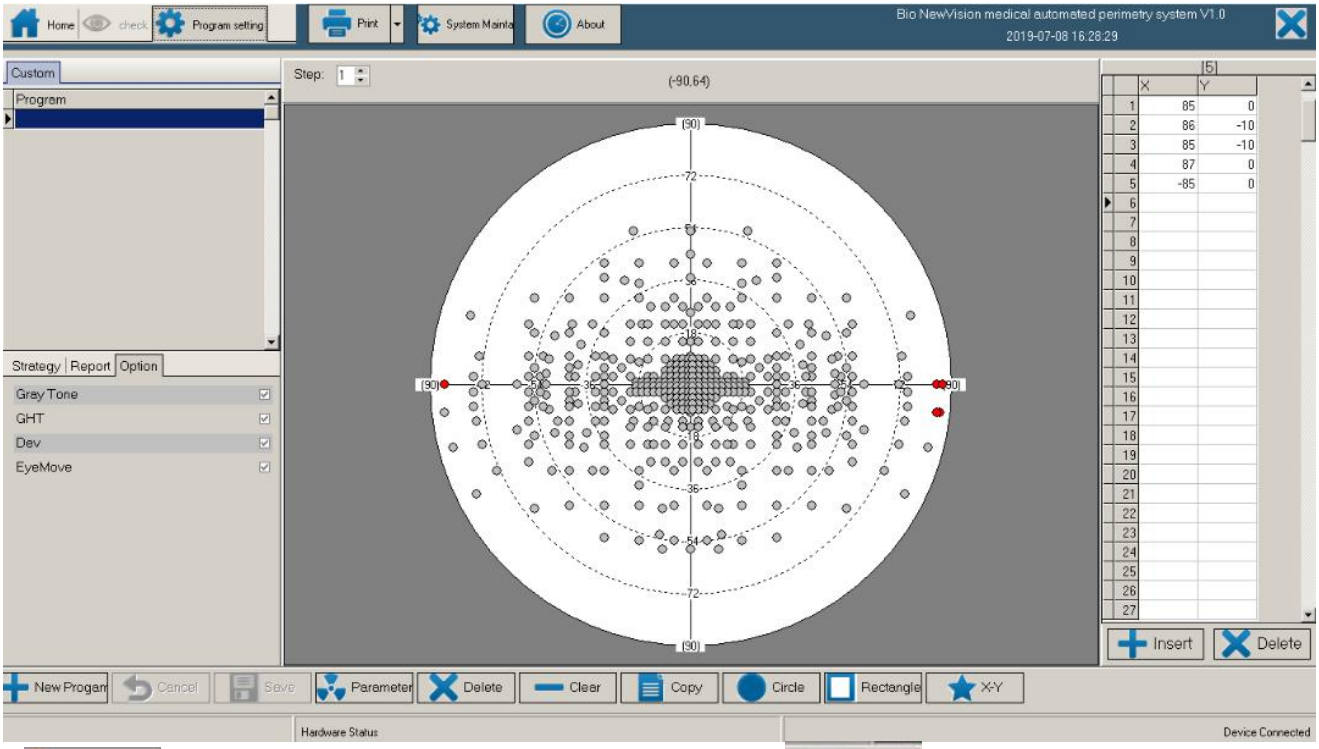
6.7 medical record inquiry

You can search by entering keywords in the main interface query bar. The diagram below:



The result of medical record inquiry is shown in the medical record column below. After selecting the required medical record, click "print" on the top to view the details of the report form of this test.

6.8 customize the program



1. 

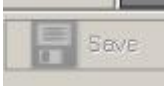
First click on the bottom left of the interface ， click 

2. There are four types of test site input methods for custom programs: The first way: by the circular way layout, click 

Button to input the range of the outer circle and the inner circle and the distance between points, and the unit is the degree of centrifugation. The diagram below:

The second way: arrange the dots by rectangle and click 

Button, input the diagonal point coordinate degree of the rectangle and the distance between points, the unit is the degree of eccentricity, after determining the automatic generation of the site. The diagram below:

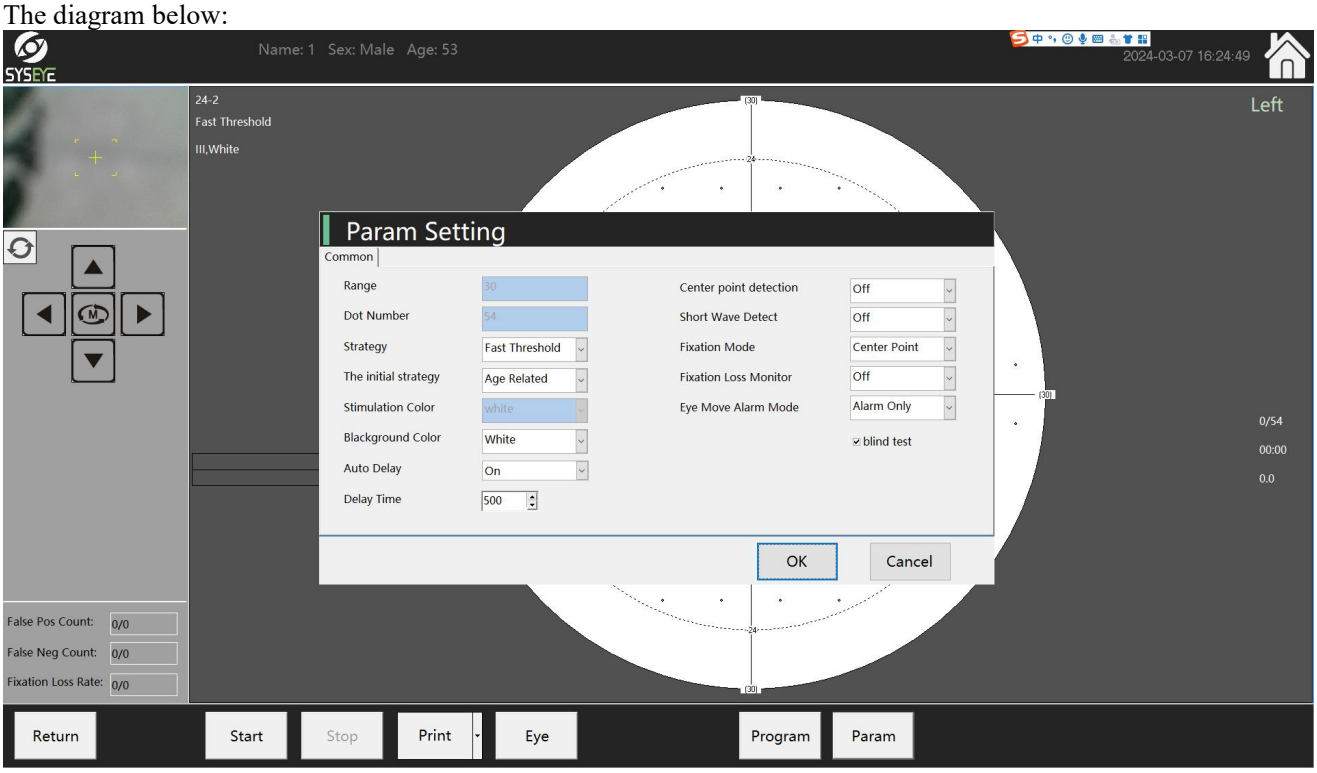
The third way: directly input the coordinates of each locus in the locus coordinate bar, with the unit of eccentricity. Click after input 

Push the button. The following figure：

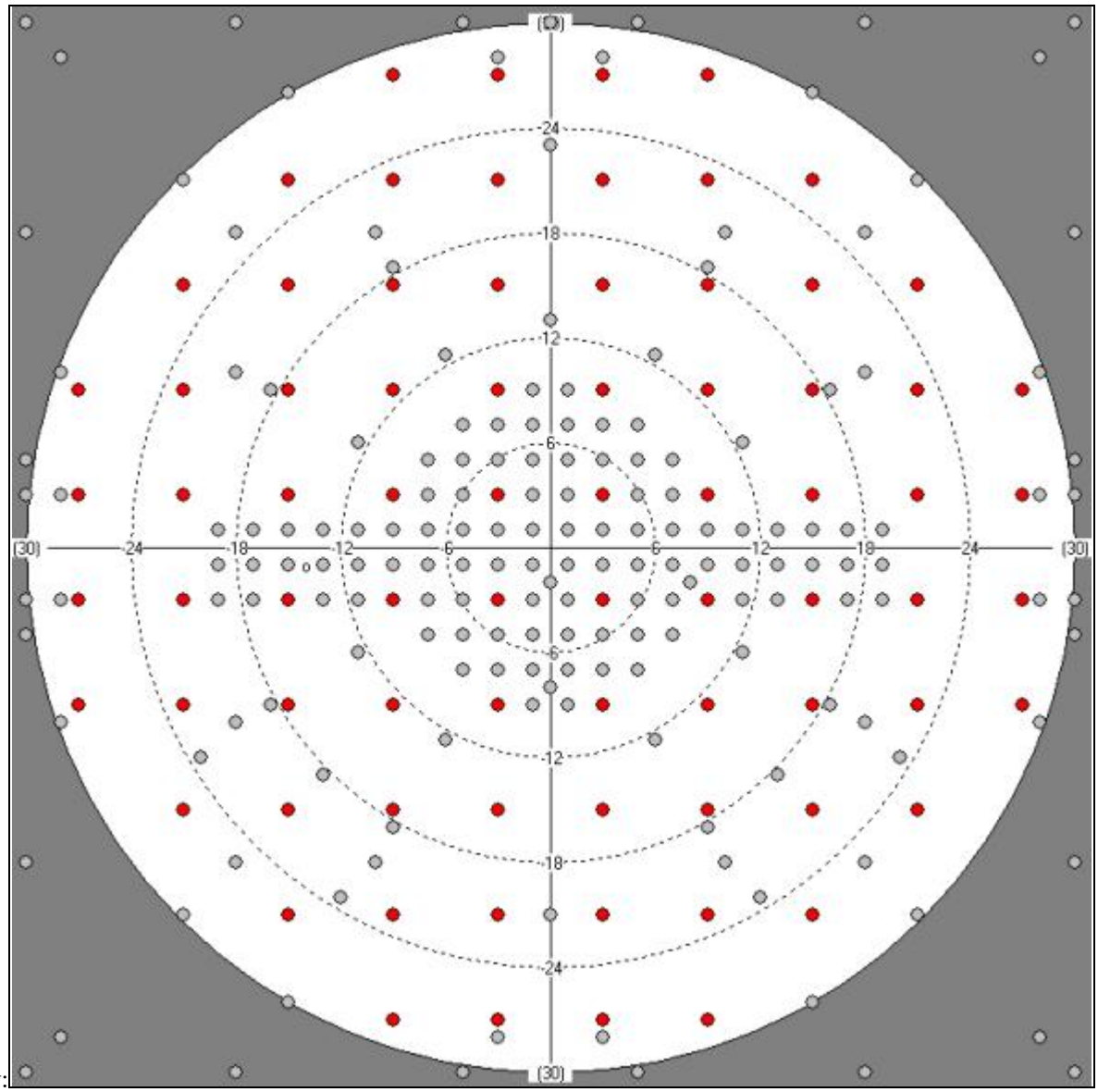
Fourth way: click 

Button. First set "test range". The unit of "test range" is eccentricity.

The diagram below:



Then click the mouse directly to select the desired site can be. The diagram

below: 

6.9 reliability of inspection results

The system provides a variety of indicators to help inspectors evaluate the reliability of visual field examination results.

These indicators include:

(1) check points:

Refers to the total number of sites involved in a computer field examination.

(2) false positive response:

When client mistakenly presses the reply button without seeing the cursor. Usually the false positive responses are caused by the patient's eagerness to be good or too nervous. The higher number of false positive responses indicates that the subject has problems with his understanding of the task or his ability to cooperate.

(4) false negative response:

When the subject does not press the reply button even when a visual marker is presented that he can definitely see. A higher rate of false negative responses is thought to indicate a lack of concentration.

(5) fixed vision loss:

During the inspection, the cursor is displayed at the blind spot at the set frequency. If the client replies, it is recorded as a fixed vision loss. The higher the blind

The number of point monitoring failures indicates poor fixation.

False positive, false negative, and solid loss rate as the general rule, if more than 20% means that the results are not reliable, but in patients with severe visual field defects, even with good cooperation, its false negative rate can still be up to 50%, so for abnormal visual field, the application value of false negative rate is very limited

6.10 horizon index

Field of view index is a concise numerical value describing the whole obtained from the statistics of the original data obtained from a field of view examination, which is the general evaluation of field of view

Parameters that allow rapid assessment of visual field defects.

(1) average sensitivity (MS) :

Is equal to the sum of the light sensitivity of each site divided by the total number of sites, and is the arithmetic mean of the light sensitivity of each point, in unit dB.

(2) average deviation (MD):

Is the average difference between the detection value and the normal mean at all sites, representing the whole visual sensitivity of the subject and the reference sensitivity of the normal people of the same age

Compared to the situation of rising or falling. The units are dB.

(3) short-term volatility (SF) :

Refers to the inevitable variation of the threshold value in a visual field examination, which is derived from all uncontrollable factors during the determination of the threshold value

Variation factors, which include uncontrollable variations in visual stimuli, changes in subjects' attention and response criteria, and visual system text

Inherent variation in the body.

(4) model standard deviation (PSD) :

PSD represents the difference between the measured visual field shape and the normal visual field shape, which represents the variation of photosensitivity and reflects local visual field defect.

The more irregular the shape of the field of view.

6.11 glaucoma semi-visual field examination (GHT)

The impairment of visual field asymmetry in glaucoma also appeared in the increased threshold difference between the upper and lower visual fields of the same eye, and the sensitization between the upper and lower visual fields

Sensitivity difference is the marker of glaucoma visual field damage.

The semi-visual field detection of glaucoma can be divided into the following threshold detection results:

(1) beyond the normal limit

(2) boundary

(3) generally decreased or abnormally high sensitivity

(4) within the normal range

6.12 brief introduction of examination procedure (left eye)

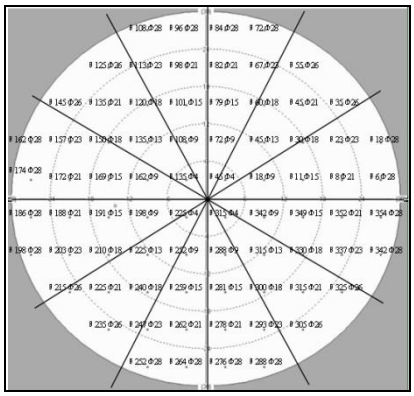
Threshold test program

(1) 30-2 procedures (recommended)

Application: general test, glaucoma, optic nerve disease, retinal disease

Range: 0° ~ 30°

Points of measurement: 76 points

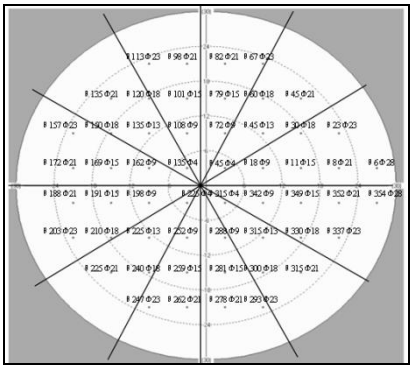


(2) 24-2 procedures (recommended)

Application: general test, glaucoma, optic nerve disease, retinal disease

Measuring range: 0° ~ 24°

Points of measurement: 54 points

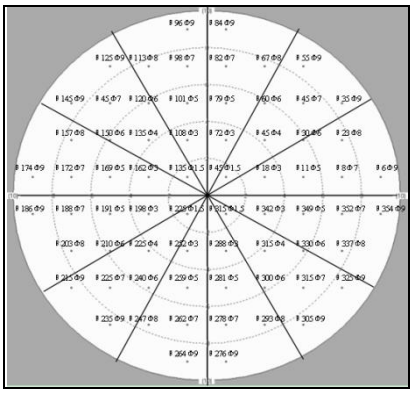


(3) 10-2 procedures

Application: macular disease, retinal disease, optic nerve disease, advanced glaucoma

Measuring range: 0° ~ 10°

Points measured: 68

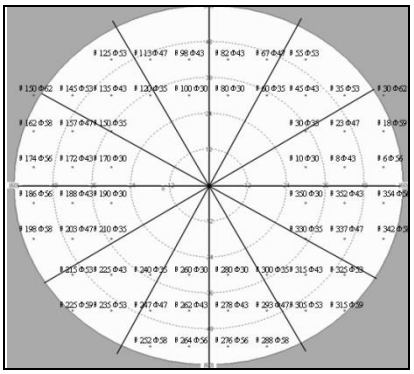


(4) 60-4 procedure

Application: retinal diseases, glaucoma

Measuring range: 30° ~ 60°

Measurement points: 60 points

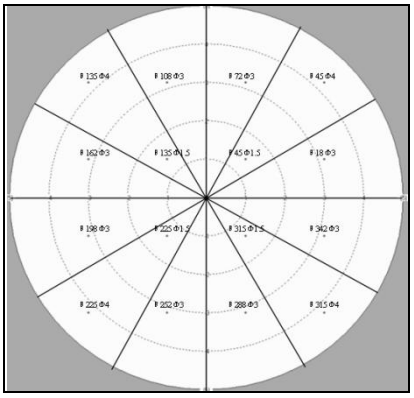


(5) macular procedure

Application: macular disease

Measuring range: 0° ~ 5°

Points of measurement: 16 points

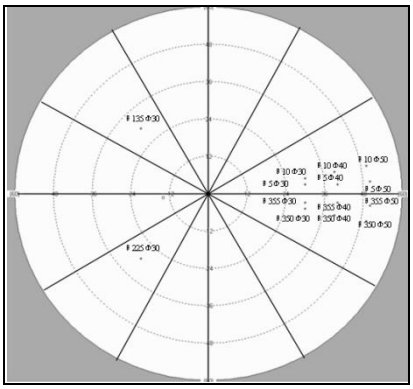


(5) nasal lateral ladder procedure

Application: glaucoma

Measuring range: 30° ~ 50°

Points of measurement: 14 points



6.13 review strategy

I. threshold strategy:

(1) full threshold strategy: change in a 4-2 way and take response as the standard;

(2) intelligent interactive strategy (recommended) : calculate and modify the stimulus value in the whole process, taking response as the standard;

(3) quick intelligent interactive strategy: the whole process of calculation and correction of the stimulus value, the change range is 50% faster than the intelligent dynamic strategy, based on the response as the standard.

Ii. Screening strategy

(4) two-region method: the response is normal and abnormal when the upper threshold value is used;

(5) three-region method: the response is normal when the upper threshold value is stimulated; If no response, the maximum brightness stimulus will be used. If the response, the relative dark spot will be recorded, if there is still no noise

Should be absolute dark spot;

(5) single stimulus: to stimulate with fixed brightness.

6.14 academic perspective

Index:

Differential light threshold vision island physiological blind spot tubular visual field (central island) fan-shaped defect (wedge defect) quadrantal defect hemianopsia macular avoid dark spot central dark spot blind spot beside central dark spot arch dark point annular dark point relative dark point absolute dark point junction dark point nasal lateral step localized depression diffuse depression

Differential light threshold: in constant background lighting, if the visibility of the stimulus spot is

50%, the stimulus intensity of the spot is the difference of light threshold.

Island of vision: refers to altitude with light sensitivity, area refers to island range, and the vision can be considered as the sea

In a small island, each point on the retina has a corresponding position on the visual island, and the fixed visual point corresponding to the fovea macula has the highest photosensitivity, constituting the peak of the visual island, while the peripheral visual field corresponding to the peripheral retina has a low light sensitivity, constituting the peripheral part of the visual island with a low altitude.

Isometric line of sight: the visual acuity of any point on the island is expressed by the vertical height of the point, and the line of each point at the same vertical height is called the visual island

In visual field, isometric line of sight.

Physiological blind spot: no photoreceptor cells in the visual papilla fixation point in the visual field of 15° temporal side of an invisible area, known as the physiological blind spot, in sight

The island appears as a vertical hole.

Tubular visual field (central island) : the visual field is extremely concentric contraction, with only 5° ~ 10° remaining in the central visual field.

Fan-shaped defect (wedge-shaped defect) : the border of the defect of the visual field follows roughly two lines of the visual field diagram

Physiological blind spot, mainly in the temporal visual field defect.

Quadrantal defect: also known as quadrantal hemianopsia, defect two boundaries are a vertical diameter line and a horizontal diameter line, that is, the defect area

According to one quadrant of the field of vision.

Hemianopia: it is divided into vertical hemianopia and horizontal hemianopia.

Macular avoidance: mainly seen in vertical hemianopsia, with a central visual field of about 5°. The presence of macular avoidance suggests that damage is located

Depending on the pay-off.

Dark spot: abnormal area of visual field or visual loss area in the field of vision, that is, the area is compared with the surrounding area of light sensitivity

Health. All dark spots in the visual field are abnormal except for physiological blind spots and vascular shadowing.

Central dark spot: dark spot covering the fixation point, accompanied by decreased vision. This demonstrates the involvement of macular fovea in the retina or macular fiber bundles in the optic nerve.

Blind central dark spot: the central dark spot covering the physiological blind spot.

Paracentral dark spot: generally refers to the visual field defect within 5° ~ 25° of the center, with a diameter greater than 5° and a depth greater than 5dB.

Arcuate dark spot refers to the arcuate dark spot connected to the physiological blind spot above or below the fixation point, wider than the temporal side of the nose, and then suddenly in the middle

Stop at the horizontal meridian.

Annular scotoma refers to a horizontal joint formed by the upper and lower bow scotoma surrounding the nasal side of the central fixation area.

Relative dark spot: refers to the increase in the intensity of cursor stimulation dark spot can disappear.

Absolute dark spot: the physiological blind spot is the typical absolute dark spot when increasing the intensity of cursor stimulation to the maximum.

Junctional dark spot: damage to one side of the optic nerve at the junction with the optic chiasm. It showed ipsilateral central dark spot and contralateral superior temporal quadrant deviation

The blind.

Lateral nasal ladder: the light threshold above and below the horizontal meridian of the nasal field of view is distinct.

Local depression: local depression occurs when the light sensitivity of the local visual field decreases, but no dark spots are formed

Got stuck. Unlike dark spots, dark spots are surrounded by relatively normal field of view, while localized depressions have no well-defined boundaries in at least one direction (usually centered). Nasal step and temporal line of sight wedge-shaped depressions are typical localized depressions.

Diffuse depression: a decrease in the consistency of light sensitivity across the field. In dynamic visual field examination, all isometric centralization was observed;

4.15 data recovery and backup

(1) backup of medical records

The visual field inspection system software is installed under D:\ Vision by default; The medical records data files are installed by default in the D:\ Vision\ DBFS directory. For the most part, the system is secure and reliable.

But usually medical records are very important to you. In order to avoid data loss caused by virus and computer system failure, we recommend you to backup the data regularly (every month).

After exiting the visual inspection software, copy the D:\ Vision\ DBFS file to a usb flash drive, other storage media or computer. It is recommended that you carve the backup data file onto the CD, and stick the date label on the CD.

(2) recovery of medical records

If the data file is lost due to virus, computer system failure, and D disk is formatted when the computer system is reinstalled, you need to recover the system data from the backup data file after reinstalling the system.

Copy the backup data

V. use and maintenance

In order to get better use effect and longer service life, it is necessary to have a good non-interference environment and correct maintenance method.

1 equipment interference source

During the use of the equipment, please avoid or stay away from the following interference sources or take isolation measures:

1.1 large surrounding power facilities and high-power wireless transceiver equipment, such as large transformers and communication base stations;

1.2 sports vehicles, airplanes and other vehicles in the surrounding environment, as well as some large mechanical equipment will cause interference to the equipment;

1.3 other medical equipment, especially medical radio frequency equipment;

1.4 other unavoidable human or natural electromagnetic interference, such as solar activity and cosmic radiation;

2 maintenance and maintenance

2.1 when starting the computer, the power of the display should be turned on first, and then the power of the host computer should be turned off. When shutting down the computer system, the power of the display should be turned off first.

2.2 monthly disk scanning and defragmenting.

2.3 in general time, the room should keep the air clean and dry, and use air conditioning as much as possible.

2.4 in case of equipment failure, the factory shall be notified or professional maintenance personnel shall be

invited for maintenance.

2.5 disposable medical absorbent cotton gauze blocks are provided for the jaw bracket, forehead bracket and responder to touch the patient's parts; After check, change gauze to be used next time.

2.6 cleaning and disinfection

2.7 wipe the ball of vision: use clean gauze, dip clean water and wring dry after wiping the dirt in the ball of vision.

2.8 disinfection of jaw bracket and forehead bracket: use absorbent cotton and dip into medical disinfectant alcohol for disinfection.

Responder: sterilize with medical disinfecting alcohol.

Equipment shell: use clean gauze, dip clean water and wring dry after wiping the dust and dirt of the shell.

Monitor: use clean gauze to remove dust and dirt from the monitor surface

Printer: use clean gauze, dip in clean water and wring dry after wiping the dust and dirt on the shell.

3 preventive inspection and maintenance

When not in use, turn off the power switch and unplug the power plug. When long-term do not use, had better electrify every month, every 10 minutes or so.

Please refer to the equipment manual or random document for the inspection and maintenance of computer and printer.

Note: please cut off the power to the host and removable socket when checking.

4 other instructions

Warning information for removable multihole socket with isolating transformer

4.1 removable multi-hole sockets should not be placed on the ground.

4.2 any additional portable porous socket or extension cord shall not be connected to the system.

4.3 the maximum allowable load of the removable multi-hole socket is 300 VA.

4.4 the removable multi-hole socket provided by the equipment can only be used to supply power to the equipment comprising the system. Non - system components are not allowed to access porous

Socket, if the socket is not part of the system, it may cause the following hazards:

1) the system cannot work normally;

2) the removable multi-hole socket is overloaded, which damages the removable multi-hole socket;

3) safety hazards caused by overload and heating of flexible power wires;

4) unpredictable electrical hazards.

4.5 during the use of the system, the operator should not contact the system network power components when contacting the patient.

4.6 when using this system, the operator shall not contact the patient, the printer, computer and other non-medical electrical equipment, or the environment of the patient

For non-medical electrical equipment, the cover and connector can be removed without the use of tools.

4.7 the connection of the electrical equipment that is not part of the system to the removable multi-hole socket may cause the equipment not to be used normally or cause leakage of current

Exceed standard, cause electrocution danger. And if the power is too large, it may cause fire.

4.8 the computers, monitors and printers that make up the system can only be connected with the multi-hole socket equipped with the system. It is strictly prohibited to connect directly with the wall socket.

4.9 the host of the device is only connected with the supporting non-medical electrical equipment in the system through input/output socket, and is not allowed to be connected with other non-medical devices

Electrical equipment is connected to avoid risk of leakage.

4.10 during the installation of the system, all parts shall be placed stably and reliably, and the network power voltage shall be confirmed to meet the requirements of this manual, and

Check whether the grounding is good, when carrying equipment, should be handled with care.

4.11 additional safety measures during the installation of the system: it is strictly prohibited to connect after power supply during the installation.

The normal operating environment conditions of the system are consistent with those of the equipment.

4.12 the system shall not be used in the case of flammable anesthetic gas mixed with air or flammable anesthetic gas mixed with oxygen or nitrous oxide

The equipment.

Suggestion: in order to get the best use effect, the user must install, operate and use the equipment according to the requirements of this manual.

Replacement instructions for replaceable and/or removable parts that would be damaged during normal use:

The specification of the fuse pipe is 5×20mm, model T2AL250V. When replacing, cut off the power and remove the backseat of the fuse with a screwdriver.

Replace the fuse with the same specification and model.

Replacement method of degreasing gauze in one use:

A take a piece of gauze.

B. Place the gauze block in the jaw bracket or forehead bracket where it comes in contact with people, and paste it well with medical adhesive cloth.

C dismantling method: pull the medical tape away and take it off.

Scrap parts should not be discarded at will, and should be disposed of according to general electrical waste or local environmental requirements.

Note: this system can only be equipped with the responder, removable multi-hole socket with isolation transformer, otherwise it will reduce the minimum safety. If the above parts are damaged, please contact us for replacement and/or maintenance.

5. manufacturer's responsibilities

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

-- assembly, addition, debugging, alteration or maintenance shall be carried out by personnel approved by the manufacturer;

-- the electrical facilities in the room should meet the requirements in this manual;

-- the equipment should be used in accordance with the operating instructions.

Transportation and storage

6.1visual field instruments with complete packaging can be transported by conventional means of transportation or as stipulated in the contract. During the transportation, precautions should be taken against moisture, sun protection, inversion and violent vibration and collision.

6.2 after packaging, the visual field instrument should be stored in the environment temperature range of 0 ℃ ~ 55 ℃, relative humidity ≤ 85%, atmospheric pressure range: 760 hPa ~ 1060 hPa, non-corrosive gas and clean room with good ventilation.

6.3 if the installed instruments need to be carried or moved over a short distance, the connecting wires between the instruments must be removed and carried separately. If the instrument needs to be transported for a long distance, it should be repacked into the original package for handling.