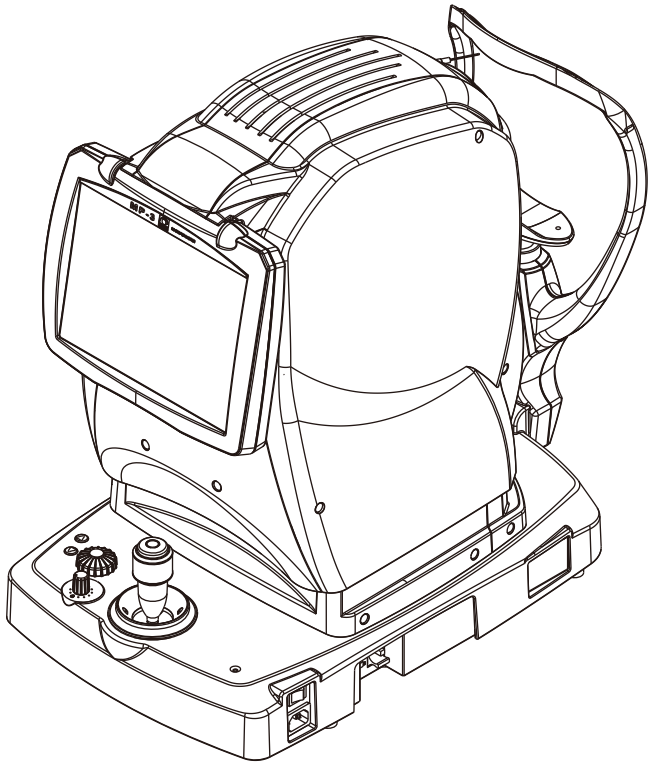
NIDEK

MICROPERIMETER
MP-3

OPERATOR'S MANUAL



Be sure to read the SOFTWARE LICENSE AGREEMENT (page Ⅱ) before using this product.

Original instructions

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Before Use

This operator's manual contains operating procedures, safety precautions, and specifications of the NIDEK MICROPERIMETER, MP-3.

Be sure to read the operator's manual prior to operation of the device to understand the safety precautions and operating procedures thoroughly.

Keep this manual handy for reference.

If you encounter any problems or have questions about the device, please contact NIDEK or your authorized distributor.

MICROSOFT SOFTWARE LICENSE TERMS for Microsoft embedded software
Microsoft OS (Windows 10 IoT Enterprise 2016 LTSB 32bit) is embedded in this device.
Read the Microsoft software license terms before using the device at our website shown below.
https://www.nidek-intl.com/aboutus/entry-3001.html/

IMPORTANT - READ CAREFULLY

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The Software and NIDEK hardware product (collectively, "NIDEK product") may include a third party's software which is linked, whether dynamically or statically, with the Software (the "Third-Party-Software"). The Third-Party-Software shall not be included in the definition of the "Software" in this Agreement. The rights and title of the Third-Party-Software belong to the third party, and the terms of use of the Third-Party-Software are set forth separately from this Agreement. The terms in this Agreement will not apply to the use of the Third-Party-Software except as expressly stipulated herein.

By using or installing the Software, you agree to be bound to the terms and conditions of this Agreement. If you do not agree with this Agreement, please do not use or install the Software and return the Software to the company from which you obtained the Software.

1. GRANT OF LICENSE

1.1. Subject to the terms and conditions set forth in this Agreement, NIDEK grants to you, and you accept, a limited, non-transferable and non-exclusive license to use the Software.

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3.2. Unless otherwise permitted and other than the part specified by NIDEK in operation manuals or any accompanying documents for the Software, you may not analyze, reverse-engineer, decompile, disassemble or otherwise attempt to discover the source code of the Software.

3.3. You may not alter, reproduce, modify, translate, adapt, or divert the Software.

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3.6. You may not create derivative works or cause or permit others to create derivative works based upon the Software without prior written consent of NIDEK.

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3.8. You may not use NIDEK’s trademarks or trade names without prior written consent of NIDEK.

4. CONDITIONS OF USE

4.1. You shall take necessary measures (including but not limited to antivirus software) to prevent failure of NIDEK product due to external factors; provided, however, that in the case where it is otherwise provided in the provisions of operation manuals for NIDEK product or other documents, you shall take such necessary measures to the extent not inconsistent with such provisions.

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6. UPDATES

6.1. The Software and/or the Third-Party-Software may be, at NIDEK's own discretion, changed, updated or modified from time to time without any prior notice to you. If such changes, updates, and modifications are applied to the Software licensed to you under this Agreement, such changes, updates, and modifications will be deemed a constituent part of the Software, and the terms and conditions of this Agreement will apply to such changes, updates, and modifications.

6.2. NIDEK may, at its own discretion, make amendments to any provisions of this Agreement (the "Amendments"), if NIDEK deems that:

a) such Amendments are appropriate in terms of interests for customers of this Software; or

b) such Amendments are commercially reasonable and not contrary to the objective of this Agreement, even if such Amendments are disadvantageous to you.

Prior to the amendments, NIDEK will notify you of the terms and the effective date of such Amendments on the website or by any other means.

6.3. If you use the Software after the effective date of such Amendments, you shall be deemed to have agreed to such Amendments.

7. TERMINATION

7.1. This Agreement is effective until terminated. If you breach any term or condition of this Agreement, NIDEK may, without giving any prior notice to you, terminate this Agreement with immediate effect. Upon termination of this Agreement due to the breach of this Agreement, NIDEK reserves all the rights to claim damages resulting from such breach.

7.2. If this Agreement is terminated in accordance with the provision of 7.1., you must immediately cease the use of the Software, and delete, destroy and erase all the Software. Any fees paid by you for the license of the Software will not be refund for any reasons.

8. NO WARRANTIES

8.1. NIDEK MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, CONCERNING THE SOFTWARE AND THE THIRD-PARTY-SOFTWARE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT OF THIRD PARTY RIGHTS, INCLUDING, WITHOUT LIMITATION, THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, ACCURACY, RELIABILITY OR AVAILABILITY, ABSENCE OF OR RECOVERY FROM ANY INTERRUPTION, ERROR-FREE OPERATION OR CORRECTION OF DEFECTS OR MALFUNCTIONS.

9. LIMITATION OF LIABILITY

9.1. EXCEPT OTHERWISE EXPRESSLY STIPULATED IN THIS AGREEMENT, IN NO EVENT WILL NIDEK BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES, LOSS, CLAIMS OR COSTS WHATSOEVER, INCLUDING, WITHOUT LIMITATION, ANY LOST DATA, PROFITS, REVENUES, BUSINESS OPPORTUNITIES OR INFORMATION, LOSS OF USE OF ANY PRODUCT, PROPERTY OR EQUIPMENT, DOWNTIME COST , COST OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR ANY CLAIMS BY A THIRD PARTY, ARISING OUT OF OR RELATED TO THE USE OR INABILITY TO USE THE SOFTWWARE AND/OR THE THIRD-PARTY-SOFTWARE, CHANGES, UPDATES OR MODIFICATIONS OF THE SOFTWARE AND/OR THE THIRD-PARTY-SOFTWARE, OR MAINTENANCE OR REPAIR SERVICE OF THE SOFTWARE IF ANY (collectively, the "DAMAGES"). THE ABOVE LIMITATIONS WILL APPLY REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, STRICT PRODUCT LIABILITY, OR OTHERWISE, EVEN IF NIDEK IS NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES.

9.2. THE LIMITATIONS PROVIDED IN THE PROVISION OF 9.1. SHALL NOT APPLY IN THE CASE WHERE THE DAMAGES ARE ATTRIBUTABLE TO NIDEK OR NIDEK IS LIABLE FOR SUCH DAMAGES IN ACCORDANCE WITH THE LAWS. EVEN IN SUCH CASE, NIDEK SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, PUNITIVE OR SPECIAL LOSS OR DAMAGE. NIDEK'S TOTAL AGGREGATE LIABILITY FOR THE DAMAGES SHALL NOT EXCEED AN AMOUNT ACTUALLY PAID BY YOU FOR PURCHASE OF NIDEK PRODUCT; PROVIDED, HOWEVER, THAT THE LIMITATION OF THE AMOUNT SHALL NOT APPLY IN THE CASE WHERE THE APPLICABLE LAW PROHOBITS SUCH LIMITATION OR THE DAMAGES ARISING FROM NIDEK'S GROSS NEGLIGENCE OR WILLFUL MISCONDUCT.

10. GOVERNING LAW AND ARBITRATION

10.1. This Agreement will be governed by and construed in accordance with the laws of Japan.

10.2. All disputes arising between you and NIDEK relating to this Agreement or the interpretation or performance thereof will be finally settled by binding arbitration in Tokyo in accordance with the Commercial Arbitration Rules of The Japan Commercial Arbitration Association. Judgment upon the award rendered by arbitration will be final and may be entered in any court having jurisdiction thereof.

11. SEVERABILITY

11.1. If any provision or any portion of any provision of this Agreement will be held to be invalid or unenforceable, that provision will be severed from this Agreement and such invalidity or unenforceability will not affect the remaining provisions of this Agreement. The remaining provisions of this Agreement will continue in full force and effect.

12. SURVIVAL

12.1. The provisions of 2, 3, 5, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19 and this provision will survive the termination of this Agreement and will be binding after the termination of the Agreement.

13. ASSIGNMENT

13.1. This Agreement or any part of this Agreement may not be assigned or transferred without prior written consent of NIDEK. The permitted assignee or transferee must agree to all the terms and conditions of this Agreement prior to the assignment or transfer.

13.2. This Agreement will be binding upon the permitted assignee or transferee and be enforceable by NIDEK.

14. ENTIRE AGREEMENT

14.1. This Agreement constitutes the entire agreement between you and NIDEK concerning the Software, and supersedes any prior written or oral agreement between you and NIDEK. No modification of this Agreement will be binding unless otherwise agreed in writing.

15. NO WAIVER

15.1. The failure of NIDEK to enforce at any time or for any period the provisions hereof in accordance with its terms will not be construed to be a waiver of such provisions or of the rights thereafter to enforce each and every provision.

16. NO THIRD PARTY RIGHTS

16.1. This Agreement is intended to be solely for the benefit of you and NIDEK and is not intended to confer any benefits upon or create any rights in favor of any person other than you and NIDEK.

17. HEADINGS

17.1. All headings are for convenience only and will not affect the meaning of any provision of this Agreement.

18. LANGUAGE

18.1. The license agreement for the Software may be provided in multiple languages. In such event, unless otherwise agreed in writing, the following shall apply:

a) If you use the Software in any countries outside Japan, the license agreement for the Software shall be executed and delivered in a text using the English language. The text using the English language shall prevail and control; and

b) If you use the Software in Japan, the license agreement for the Software shall be executed and delivered in a text using Japanese language. The text using the Japanese language shall prevail and control.

19. APPLICATION OF SOFTWARE LICENSE AGREEMENT

19.1. If the terms and conditions of the "Software License Agreement" included in operations manuals for NIDEK product are inconsistent with the terms and conditions of the "Software License Agreement" displayed on NIDEK product, the terms and conditions of the "Software License Agreement" included in operations manuals for NIDEK product prevail.

Table of Contents

1 SAFETY PRECAUTIONS

1.1 For Safe Use

⚠ **BEFORE USE, READ THIS MANUAL.**
Be sure to read the operator's manual prior to operation of the device to understand the safety precautions and operating procedures thoroughly.

In this manual, a signal word is used to designate the degree or level of safety alerting.
⚠ **WARNING** Indicates a potentially hazardous situation which, if not avoided, might result in death or serious injury.
⚠ **CAUTION** Indicates a potentially hazardous situation which, if not avoided, might result in minor or moderate injury or property damage accident.
Even situations indicated by ⚠ **CAUTION** may result in serious injury under certain conditions. Safety precautions must be strictly followed at all times.

1.2 Usage Precautions

Before use

⚠ WARNING

- If any serious device-related incident occurs, report it to NIDEK and the competent authority in the country where the user or patient, or both reside.
- Be sure to use a grounded power outlet.

  Electric shock or fire may result from device malfunction or electric leakage.
- Never modify the device.

  Electric shock or malfunction may result.

⚠ CAUTION

- Do not use this device for other than the intended purpose.

  NIDEK is not responsible for accidents or malfunctions caused by misuse.
- Cautions for safety and operating procedures must be thoroughly understood before using this device. Do not use accessories that are not specified by NIDEK.

  Use of the device outside the scope of the specified use may result in adverse events and adverse device effects.
- Use of the device is limited to doctors or persons qualified by the law of each country. Also confirm that the patient to be examined (patient in all ages except for infant) can be seated on the chair and properly respond to operator.

  Use of the device outside the scope of the specified use may result in adverse events and adverse device effects. NIDEK is not responsible for accidents or malfunctions caused by misuse.
- Never touch the interior of the device.

  There is no part within the device that requires servicing by the user.

⚠ CAUTION

- Be sure to install the device where the conditions below can be maintained.
  In addition, use the device under the conditions below.

  Ambient temperature: 10 to 35°C (50 to 95°F)
  Humidity: 30 to 90% (non-condensing)
  Atmospheric pressure: 800 to 1060 hPa
  A location with low dust
  A location not exposed to water
  Protected from interference lights
  Protected from exposure to strong electromagnetic waves
  Level and stable surface free from vibration and bumping.
  The room can be darkened to the degree that a newspaper can barely be read
  The room that can be used as a dark room (with brightness below 0.1 lux) for the scotopic microperimetry test and scotopic fixation test (for type S).

  If the device is not installed and used under the above conditions, the reliability of measurement is lowered, and malfunction may result. In addition, there is a possibility of injury if the device receives shock and falls down.

- Avoid installing the device where it is exposed to direct air-conditioning flow.

  Changes in temperature may result in condensation inside the device or adversely affect the device performance.

- Be sure to use a (HOSPITAL GRADE) power outlet which meets the power specification requirements.

  The device may not perform properly, or malfunction or fire may occur.

- Never use a power strip or extension cable to supply the device with power.

  The electrical safety may be lowered.

- Do not use a power cord other than the one provided. In addition, do not connect the provided power cord to any other device.

  Failure or fire may result.

- Do not place heavy objects on the power cord.

  A damaged power cord may cause fire or electric shock.

- Before connecting the cable, turn OFF the power switch and disconnect the power cord from the power outlet.

  Malfunction of the device may result.

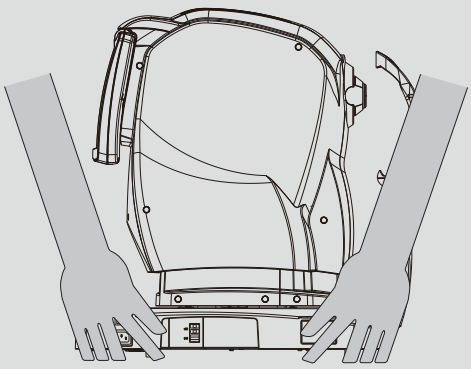
- Install the device so that the outlet that the mains plug is inserted into is easily accessible during use. In addition, ensure that the power cord can be disconnected without the use of any tool.

  Failure to do so may interfere with disconnecting the power from the input power source in case of an abnormality.

- Insert the plug properly into the connector with the correct orientation according to the indication. Do not apply undue force to make the connections.

- The main body should be carried by two persons holding it at positions (A) and (B) (both right and left sides).
  Hold it by the bottom of the base unit. Avoid lifting it by the forehead rest or the main unit.

  If only one person carries the device, or areas other than the base are used for lifting and the device falls, there is a possibility of injury or malfunction.



(A) (B)

During use

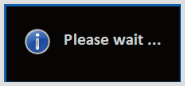
⚠ CAUTION

- Do not perform servicing or maintenance on the device during use.
- Before use, perform visual and operation checks. If abnormal conditions are encountered, stop using the device.

  If the device is used under abnormal conditions, intended results may not be achieved. Also unanticipated malfunctions or health hazards may occur due to improper diagnosis.
- For the test in the scotopic environment, it is desirable that the patient is properly adapted to the darkness. To perform the test properly, the following should be performed.

  1. After setting the test, turn the filter knob to “S” position to change the screen color to dark-red.
  2. Turn off the room lighting (the brightness should be darker than 0.1 lux),
  3. Wait until the patient adapts to the darkness. Then, start the test.
- Do not turn the filter knob position from “S” to “P” during the scotopic microperimetry test or scotopic fixation test.

  The device interior brightness becomes normal state and the patient cannot adapt to the darkness. This results in improper test and test cancellation.
- If the operator presses any button and the following message “Please wait...” appears, do not change the filter knob position from “P” to “S”.

  The operation may stop while the message still remains on the screen. In such a case, turn the filter knob to “P” position. Doing so closes the message and enables the operation again.
- Before and after use of the device, and before examining each patient, clean the forehead rest, chinrest, and response button with clean gauze or absorbent cotton. If necessary, dampen a cloth with rubbing alcohol and gently wipe them off.

  If the chinrest paper is used, remove a single sheet from the stack of sheets.
- Do not use a cloth that is overly dampened with rubbing alcohol to clean the forehead rest.

  Deterioration of the forehead rest may result.
- Take care not to place hands or fingers under (or between) the moving parts (image capturing unit, main unit, and chinrest). Be sure to also caution patients.

  Hands or fingers may be pinched and may result in injury.
- Keep the objective lens free of fingerprints and dust. Also confirm that it is not dirty before use.

  The quality of the captured image may be compromised.
- In the event of smoke or strange odors, immediately turn off the device and disconnect the power plug from the power outlet. After confirming that the device no longer generates smoke, contact NIDEK or your authorized distributor.

  Use of the device under such abnormal conditions may cause fire or electric shock. In case of fire, use a dry chemical (ABC) extinguisher to extinguish the fire.
- Before performing the test, explain the purpose and method sufficiently to patients.
- When bringing the measuring unit near to the patient's face or moving it right and left, take care not to contact the patient's face.

  Injury may occur.
- Instruct the patient to focus on the fixation target with their eyes wide open. Start the test after confirming that the instruction is properly followed by the patient.

  If the instructions are not properly followed, proper test result may not be obtained.
- After the test is complete, and the patient leaving from the device, be sure not to stand up holding the chinrest.

  The device may topple over resulting in injury.
- Never press the LCD touch-screen with hard point objects such as ball-point pen. Use the accessory touch pen. Never place magnetic objects near the LCD touch-screen.

  The device malfunction may occur.
- According to the LCD touch-screen characteristics, some pixels may be constantly lit or not lit. This is not failure so the LCD touch-screen may continue to be used.
- Should the device fail, disconnect the power cord from the power outlet and contact NIDEK or your authorized distributor without touching the interior of the device.
- After a long period of disuse, check for any abnormality before use.

⚠ CAUTION

- If the device is connected to a computer that does not comply with IEC 60601-1 (except one that uses an AC adapter that meets the Class II requirements of IEC 60950-1 or IEC 62368-1), supply power to the device and computer through an isolation transformer.

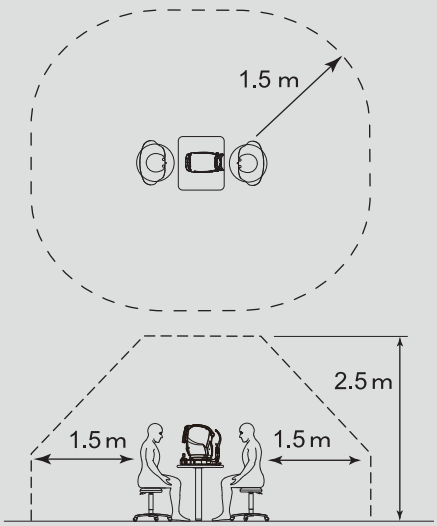
  Electric shock may result. Contact NIDEK or your authorized distributor for installing isolation transformers.

- When connecting to peripheral equipment such as a computer through LAN port via a medical facility network, insert or connect an isolation transformer between the medical electrical equipment and network devices (HUB etc.), or the network devices and other electrical equipment.

  Electric shock may result. Contact NIDEK or your authorized distributor for installing isolation transformers.

- Use devices that comply with IEC 60601-1 in the patient environment. If any device that does not comply with IEC 60601-1 is to be used, use an isolation transformer or common protective grounding.

  The figure below shows the volume of space (patient environment) in which contact can occur between the patient and any part of the device or between the patient and any other person(s) touching the device.



After use

⚠ CAUTION

- When the device is not in use, turn off the power switch and place the dust cover over the device main body.

  Dust may affect the image capturing performance.

- Make sure that the power switch is turned off before connecting or disconnecting the power cord to or from the power outlet.

  If the power cord is connected or disconnected with the power switch on, device malfunction may occur.

- If the device is not to be used for a long time, disconnect the power cord from the power outlet.
- Maintain the ambient temperature and humidity in the following ranges during transport and storage of the device in the packed condition.

  Temperature: -30 to 60°C (-22 to 140°F) (during transport),
  -10 to 55°C (14 to 131°F) (during storage)

  Humidity: 10 to 95% (non-condensing)

  Atmospheric pressure: 700 to 1060 hPa

  A location with low dust

  A location not exposed to water

  A location not exposed to direct sunlight

- To transport the device, set the device to packing mode and pack the device in the packing material in which the device was delivered. In addition, avoid vibration or shock to the device.

  Excessive vibration or shock may reduce the device reliability.

Maintenance

⚠ CAUTION

- When replacing the xenon flash lamp, contact NIDEK or your authorized distributor.

  Extremely high voltage part exists inside of the xenon flash lamp. When opening the lamphouse cover or replacing the lamp, electric shock may result.

  For the replacement parts, *"O Parts to be maintained by service personnel" (page 141)*.

- To ensure the continued safe use of the device, it is recommended that the manager of this device make sure that maintenance and preventive inspection are performed at least once a year.

  For details of maintenance and preventive inspection, ask NIDEK or your authorized distributor. If the manager of this device cannot perform the maintenance and preventive inspection, contact NIDEK or your authorized distributor.

- Only service personnel trained by NIDEK can repair the device.

  NIDEK will not be responsible for accidents caused by improper servicing.

- Before performing maintenance, clean the surface of the device properly with a clean cloth dampened with rubbing alcohol.
- When sending the device back to NIDEK for repair or maintenance, clean the surfaces of the device (especially, the areas that come into contact with the patient) with a clean cloth dampened with rubbing alcohol.
- Do not use the device beyond its service life.

  Even with proper maintenance and check, after time, the device reliability or safety may become degraded and fail to achieve the target values.

Disposal

⚠ CAUTION

- When disposing of the device and accessories, sort them by material and follow local ordinances and recycling regulations. Follow local governing ordinances and recycling plans regarding disposal or recycling of device components, particularly when disposing of the lithium ion battery, circuit board, plastic parts that contain brominated flame retardant, LCD, or power cord.

  It is recommended to entrust the disposal to a designated industrial waste disposal contractor.

  Inappropriate disposal may contaminate the environment.

- When disposing of packing materials, sort them by material and follow local ordinances and recycling regulations.

  Inappropriate disposal may contaminate the environment.

Connection to network

⚠ CAUTION

- If the medical system is to be configured using an IT network, implement IT security measures with the network administrator, and check that the system operates properly.

  Virus infection, unauthorized access, or data tampering may result.

1.3 Labels and Symbols

■ Cautionary labels are provided on the device. If the labels are peeling off or the characters are wearing off, contact NIDEK or your authorized distributor.

	Indicates that the operator is advised to refer to the related instructions in the operator's manual.
	Indicates that the degree of protection against electric shock is of a Type B Applied Part. The applied parts are the forehead rest, chinrest, and response button. *"2.2.1 Device description" (page 12)*
	Indicates that when the switch is pressed to this symbol side, power is not supplied to the device.
	Indicates that when the switch is pressed to this symbol side, power is supplied to the device.
	Indicates that the device must be supplied only with alternating current.
	Indicates that this product must be disposed of in a separate collection of electrical and electronic equipment in EU.
	Indicates the date of manufacture.
	Indicates the manufacturer.
	Indicates the port to which to connect the response button terminal.
	Indicates the knob adjusting the fundus observation light intensity.
MD	Medical device
EC REP	EU authorized representative
CH REP	Swiss authorized representative
SN	Serial number
REF	Catalogue number
UDI	Unique Device Identifier

2 BEFORE USE

2.1 Outline of Device

■ The NIDEK MICROPERIMETER, MP-3 measures the visual sensitivity of a specified area on the fundus according to the patient's response, and captures color fundus images. The fundus image overlaid with the retinal sensitivity mapping is displayed on the screen for fundus-image-correlated evaluation.

2.1.1 Intended use

This device is indicated for measuring macular sensitivity, fixation stability and the locus of fixation, as well as providing color fundus imaging.

2.1.2 Intended patient population

- Age

  All ages except babies and infants

- Health condition

  Able to sit in a chair

  Able to answer the operator's questions

- Conditions - Visual function

  One or both eyes are normal or have disease.

2.1.3 Intended user profile

Ophthalmologist, other doctors, nurse, clinical technologist, orthoptist/OD

2.1.4 Intended use environment

Medical facility

⚠ CAUTION

- If the device is used outside the specified use location, intended performance and security level cannot be maintained.

2.1.5 Principle

(1) Visual sensitivity mapping function

Visual sensitivity mapping can be displayed using static perimetry principle.

Stimuli and a fixation target are displayed by the built-in LCD projector. While focusing on the fixation target, the patient presses the response button to indicate that they saw a stimulus projected at the location and light intensity specified by the internal measurement program or the operator. The patient's response signals are computed by the device and measurement results are displayed on the LCD.

(2) Fundus photography function

Auto alignment is performed while observing on the LCD, the front of the patient’s eye illuminated by the eye front illumination LED (infrared light). After the alignment is roughly complete, the mode automatically changes to the fundus observation mode.

The fundus of the patient's eye is illuminated by the fundus illumination LED (infrared light). After alignment and focusing are automatically performed on the fundus, white light from the xenon flash lamp is emitted on the fundus. The light reflected from the fundus is captured by the built-in color CCD camera for fundus image capture.

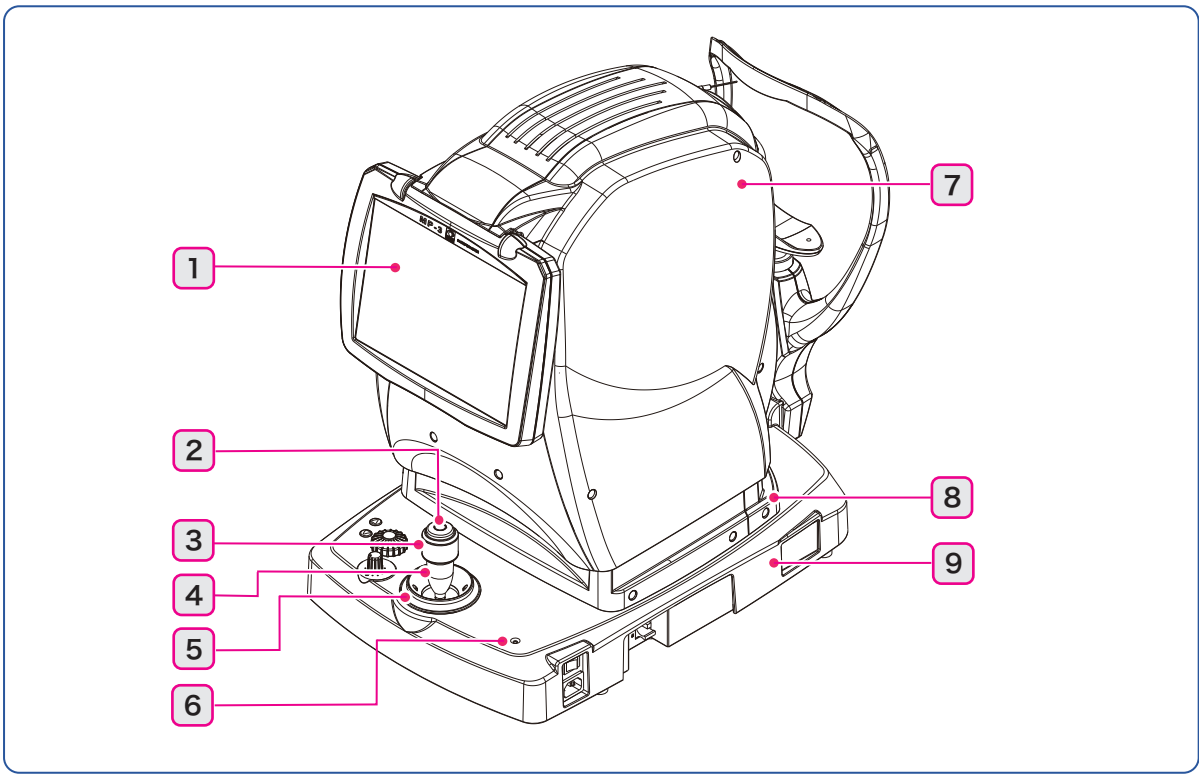
2.2 Configuration and Functions

- The MP-3 can be used over a LAN network with a computer running NAVIS-EX and provided MP Viewer for NAVIS-EX. *" During use" (page 4)*

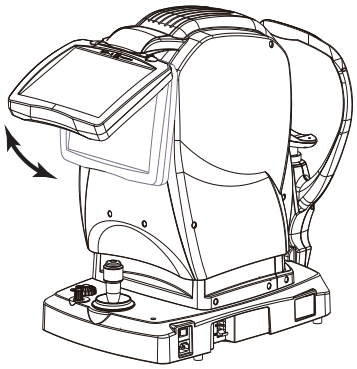
  In this manual, the applicable computer is referred to as "PC", and network connection as "LAN connection".
- The scotopic filter is equipped in the type S [factory setting] to enable the test in the scotopic environment.

—	**Test in the scotopic environment**
Microperimetry test	Scotopic microperimetry test
Fundus image capture	—
Fixation test	Scotopic fixation test
Feedback exam.	—

2.2.1 Device description



1 LCD touch-screen



Various operation screens, image capturing screen, and test data are displayed.

Press displayed buttons to operate the device.

When the buttons are difficult to use by finger, use the touch pen.

The 10.4-inch color LCD monitor can be adjusted by pulling the lower part to tilt it at various angles.

If operator uses the device in a standing posture, tilt the screen at a suitable angle.

To return the screen to the original position, raise it as high as it goes (horizontal position), then slowly lower it.

When the screen is at the origin position, it is secured with a magnet.

2 Release button

Captures fundus images when the auto shot function is set to off (manual).

3 Joystick knob

Moves the measuring unit up and down. (Clockwise: Up, Counterclockwise: Down)

4 Joystick

Slightly moves the measuring unit left and right or forward and backward.

5 Coarse adjustment control

Roughly moves the main unit left and right or forward and backward.

6 Pilot LED

Illuminates when the device is turned on (|).

Blinks after the device is turned off and when the device is in Sleep mode[*1].

"3.3.2 Shutdown" (page 58), *"O System1/4" (page 137)*.

Note

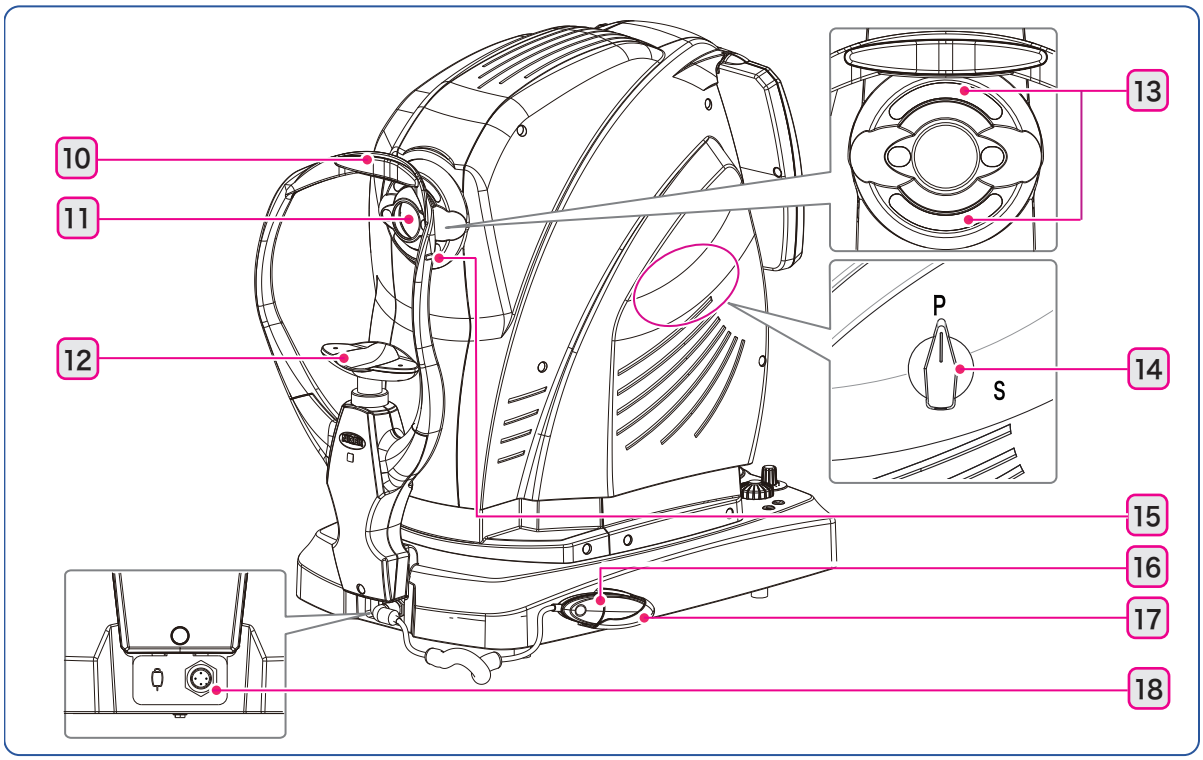
- In the type S models, the pilot LED turns off while the scotopic environment is enabled (the filter knob is on "S" position). Note that the pilot LED blinks in the sleep mode of the scotopic environment.

7 Measuring unit

8 Main unit

9 Base

*1The device automatically enters sleep mode when the device is left idle for a pre-determined period of time to save power. (The screen turns off.) However, the device will not enter sleep mode during testing. The preset times for sleep mode are 5, 10, and 15 minutes. (The factory setting is 15 minutes.)



10 Forehead rest

The patient's forehead is rested on the forehead rest to prevent their head from moving.

11 Objective lens

12 Chinrest

13 Eye front illumination LED

Infrared LED used for auto alignment during test with illuminating patient's eye front

14 Scotopic filter knob Equipped with type S models (*"2.2.2 HOME screen" (page 17)*)

Used to insert/remove the scotopic filter.

When the knob is turned to "P": The scotopic filter is removed.

When the knob is turned to "S": The scotopic filter is inserted and the operator can execute the test in the scotopic environment.

15 Eye level marker

Used as a guide for the patient's eye level.

16 Response button

The device records that the patient visually recognized a stimulus when the patient presses the response button during the visual sensitivity test.

Instruct patients to press the response button only when they clearly recognize stimuli.

When the button is pressed, a short beep sounds.

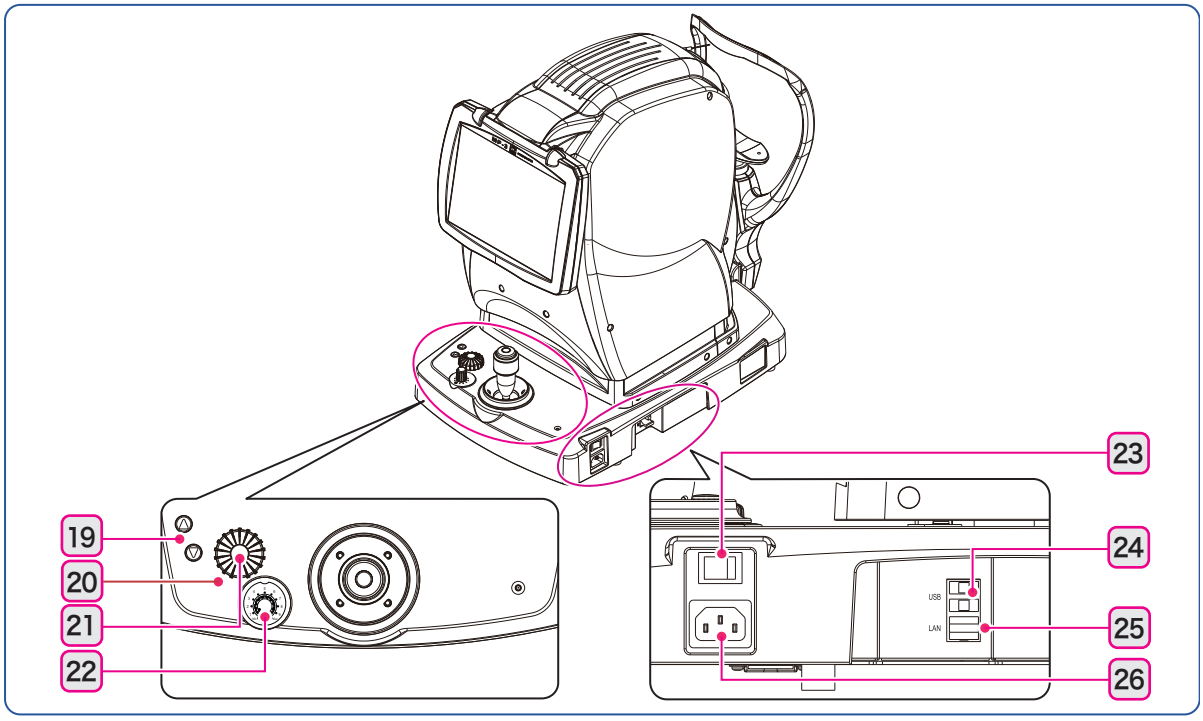
17 Response button holder

Attachable by the base built-in magnet. When moving the device, remove the holder.

18 Response button connector

Port to connect the response button

When transporting the device, disconnect the response button from the port.



⚠ CAUTION

- Equipment connected to the analog or digital interfaces must be certified according to the representative appropriate national standards (such as IEC 60601-1). Furthermore, all configurations must comply with the system standard IEC 60601-1. Anyone who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore responsible that the system complies with the requirements of the system standard IEC 60601-1. If in doubt, consult NIDEK or your authorized distributor.
- For the external device to be connected over a LAN, use the EMC complaint device (CISPR32).

19 Chinrest up/down buttons (▲ / ▼)

When the chinrest reaches the upper (or lower) limit of its movable range, the upper limit mark (or) is displayed on the screen.

20 Focus knob

Adjusts the focus of the fundus image. (Clockwise: to the +Diopter direction, Counterclockwise: to the - Diopter direction)

21 Eye front/fundus observation toggle button

Toggles between the eye front observation and fundus observation screens.

22 Fundus observation illumination intensity knob

Adjusts the intensity for fundus observation illumination (infrared light).
(Clockwise: Intensity is increased, Counterclockwise: Intensity is reduced.)

23 Power switch

Press ON (|) to turn on power to the device.

Be sure to press the Shutdown button on the HOME screen before turning off the device.

24 USB port

USB ports to connect other devices. Two ports are available. (USB 2.0 supported)

Prior to use, consult NIDEK or your authorized distributor.

25 LAN port

Port to connect with a PC over a LAN.

The measurement data can be exchanged between the device and PC.

Prior to use, contact NIDEK or your authorized distributor.

26 Power inlet

The removable power cord is connected.

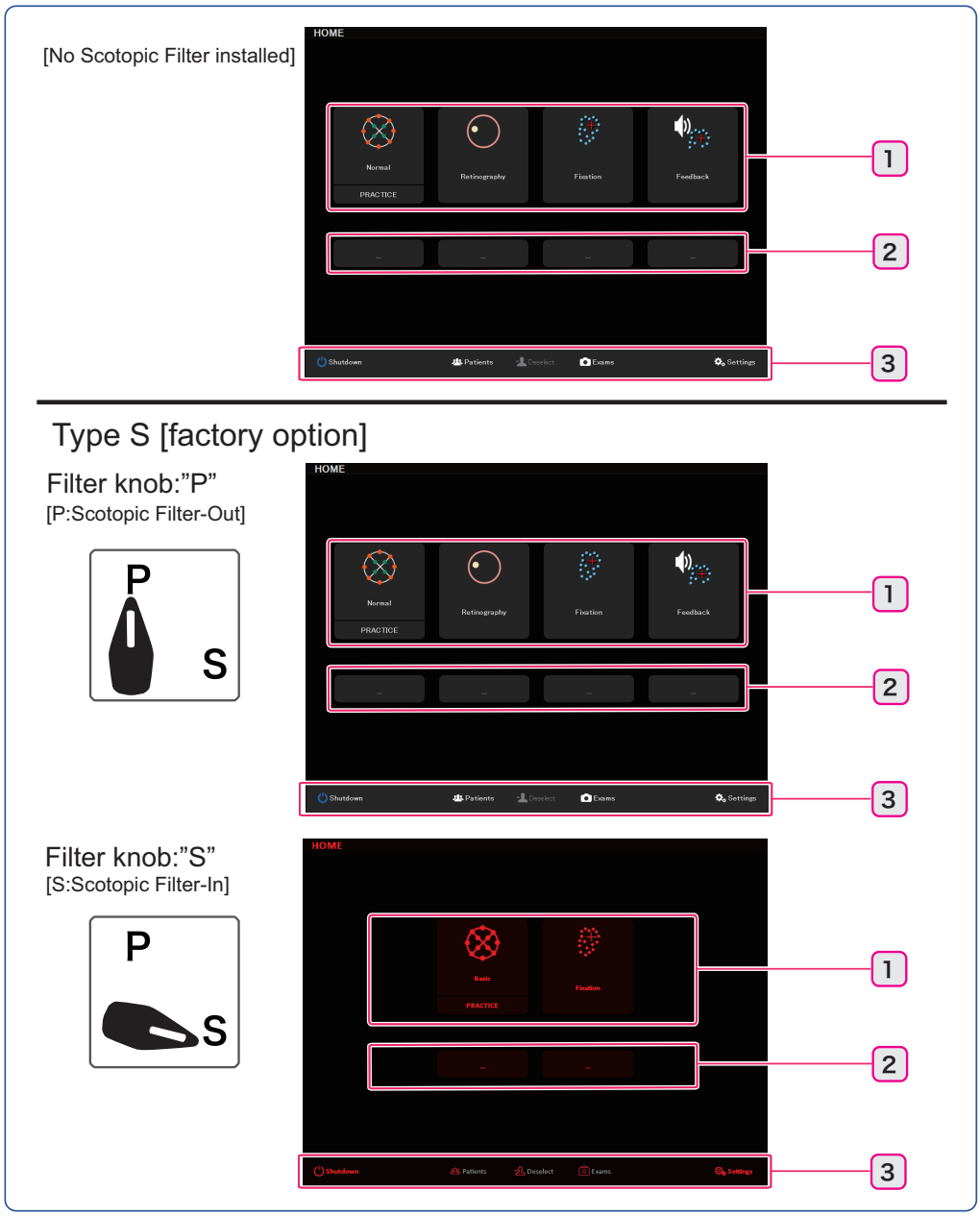
2.2.2 HOME screen

The screen to select a test type.

Type S: Turning the filter knob to “S” position enables the test in the scotopic environment.

Note

- Depending on the operation status, unnecessary buttons are displayed in gray inactive.
- When the scotopic environment is enabled with type S (the filter knob is on "S"), the screen brightness is low and the screen color is dark-red (same on the *“PATIENTS screen”*, *“Test screen”*, *“EXAMS screen”*, and *“View screen”*).

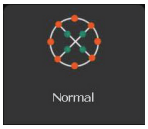
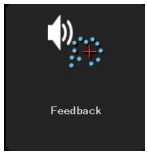


1 Test button

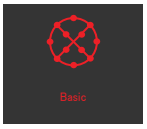
Press the button of the desired test.

When the device is connected to a PC over a LAN: Pressing this button with no patient selected displays the PATIENTS screen.

*A-1, *A-2, *B-1, *B-2, *C, *D-1, *D-2, and *E correspond to those used in the table of “2 Test configuration list button” on the following page.

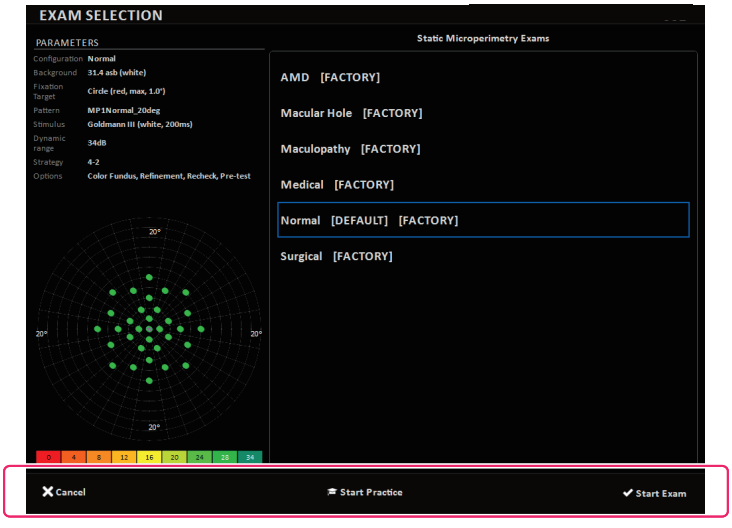
- (type S: Filter knob: “P”)	 *A-1	**STATIC MICROPERIMETRY** Microperimetry test (visual sensitivity mapping) Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Normal** *“4.5.2 Exam setting” (page 123)*
	 *B-1	**STATIC MICROPERIMETRY PRACTICE** Microperimetry test practice mode Response button practice function *“3.5.5 Microperimetry test practice mode: PRACTICE” (page 87)*
	 *C	**RETINOGRAPHY** Fundus photography Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Retinography** *“4.5.2 Exam setting” (page 123)*
	 *D	**FIXATION** Fixation test Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Fixation** *“4.5.2 Exam setting” (page 123)*
	 *E	**FEEDBACK** Feedback exam. Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Feedback** *“4.5.2 Exam setting” (page 123)*

In the type S model, the following tests are also available by turning the filter knob to “S” position.

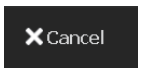
Test in the scotopic environment (type S: Filter knob:"S")	 *A-2	SCOTOPIC STATIC MICROPERIMETRY Scotopic microperimetry test (visual sensitivity mapping) Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Basic** *“4.5.2 Exam setting” (page 123)*
	PRACTICE *B-2	SCOTOPIC STATIC MICROPERIMETRY PRACTICE Scotopic microperimetry test practice mode Response button practice function *“3.5.5 Microperimetry test practice mode: PRACTICE” (page 87)*
	 *D-2	SCOTOPIC FIXATION Scotopic fixation test Performs the test with the default test configuration. The name of the default test configuration is displayed on the button. Example to the left: **Fixation** *“4.5.2 Exam setting” (page 123)*

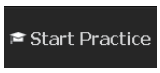
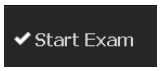
2 ... Test configuration list button

Press this button to display the registered test configuration list.



Select the desired test configuration on the list screen and press any of the following buttons.

Button	Function	*A-1 *A-2	*C	*D-1 *D-2	*E
 Cancel	Displays the HOME screen.	○	○	○	○

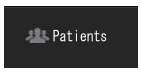
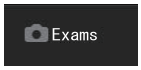
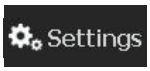
 Start Practice*1	Goes to the microperimetry test or scotopic microperimetry practice screen.	○	–	–	–
 Start Exam*1	Goes to the test screen.	○	○	○	○

*1 When the device is connected to a computer over a LAN and no patient is selected, the PATIENTS screen is displayed.

Test configurations can be added on the setting screen. *"4.5.2 Exam setting" (page 123)*

3 Operation buttons (HOME screen)

Buttons to display the patient list, set the test parameter, or shut down the device.

 Shutdown	Displays the confirmation message dialog box. Pressing the OK button on the confirmation message dialog box shuts down the device.
 Patients *1	Displays the PATIENTS screen.
 Deselect *1	Deselects the patient.
 Exams *1	When a patient is selected: Displays the EXAMS screen. When no patient is selected: Displays the PATIENTS screen.
 Settings	Displays the setting screen.

*1: The button becomes enabled only when the device is connected to a PC over a LAN.

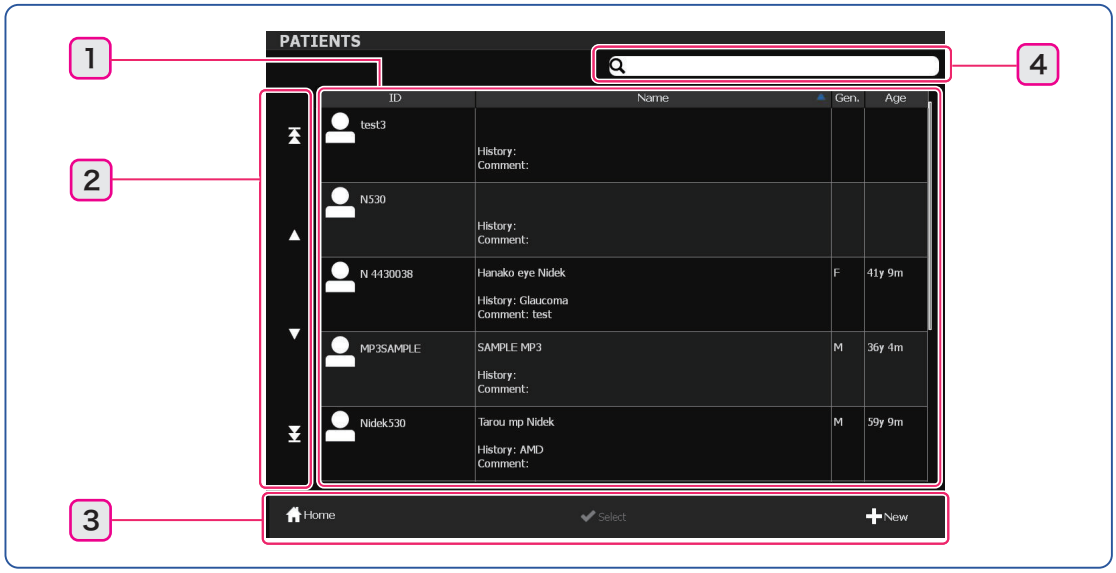
2.2.3 PATIENTS screen

The screen to register and select patients.

This screen is displayed only when the device is connected to a PC over a LAN.

Note

- Depending on the operation status, the test buttons that are not necessary to be used are displayed in gray. The buttons displayed in gray are inactive.



1 Patient list

Displays the information of the registered patients.

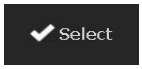
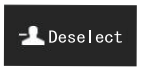
2 Patient list scroll buttons

Buttons to scroll the patient list.

	Displays the first page (the earliest patient).
	Moves up the list by page (displays the previous page).
	Moves down the list by page (displays the next page).
	Displays the last page (the most recent patient).

3 Operation buttons (PATIENTS screen)

Buttons to display HOME screen, register a new patient, and select a registered patient.

 Home	Displays the HOME screen.
 Select	Confirms the patient selected (touched) on the patient list. After the confirmation, the screen changes as follows: When the PATIENTS screen is displayed by pressing the Patients button: The HOME screen appears. When the PATIENTS screen is displayed by pressing the test button/test configuration without selecting a patient: The Test screen appears.
 Deselect	Deselects the patient.
 New	Displays the patient registration screen and registers a new patient. *"3.5.3 Patient registration" (page 63)*

4 Patient search button (PATIENTS screen)

Touch the field to display the keyboard button.

Input a patient name or ID on the keyboard screen to search.

The item to be searched is displayed in the patient search field and the applicable patients are displayed in the patient list.

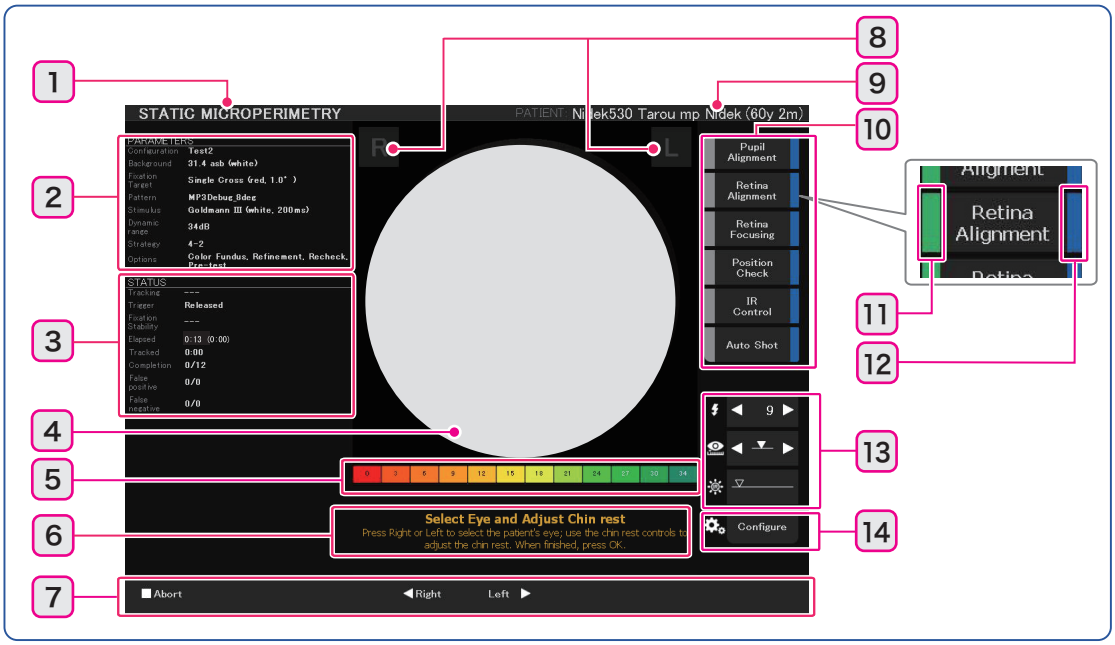
To return to the patient list, press the button again and delete the item to be searched in the keyboard screen.

2.2.4 Test screen

The basic screen for performing tests.

Note

- Depending on the operation status, the test buttons that are not necessary to be used are displayed in gray. The buttons displayed in gray are inactive.



1 Test name

*A-1: STATIC MICROPERIMETRY: Microperimetry test

*B-1: STATIC MICROPERIMETRY PRACTICE: Practice of microperimetry test

*C: RETINOGRAPHY: Fundus image capture

*D-1: FIXATION: Fixation test

*E: FEEDBACK: Feedback exam.

The following tests are also available in the type S.

*A-2: SCOTOPIC STATIC MICROPERIMETRY: Scotopic microperimetry test

*B-2: SCOTOPIC STATIC MICROPERIMETRY PRACTICE: Practice of Scotopic microperimetry test

*D-2: SCOTOPIC FIXATION: Scotopic fixation test

2 Parameters

Displays various parameters for the test.

PARAMETERS	Parameter contents	*A-1 *A-2	*B-1 *B-2	*C	*D-1 *D-2	*E
Configuration	Test configuration name	○	○	○	○	○
Background	Background luminance	○	○	○ (4asb only)	○	○
Fixation Target	Fixation target information (Shape, color, brightness, and size)	○	○	○	○	○
Pattern	Stimuli arrangement pattern When Pattern type is set to Automatic Stimuli arrangement pattern name display Information of stimuli arrangement pattern rotation (nnn.n° rotation)..... The pattern is rotated by nnn.n°. When Pattern type is set to Semi-automatic or Manual The corresponding Semi-automatic / Manual display When Pattern type is set to Peripapillary: Peri-papillary display	○	○ (*1)	–	–	–
Stimulus	Stimulus size	○	○	–	–	–
Trl radius	TRL (Target Retinal Locus) size	–	–	–	–	○
Feedback stimulus	Whether or not to display the feedback stimulus icon None: No display Checkerboard: Displayed	–	–	–	–	○
Dynamic range	Dynamic range of stimuli luminance	○	○	–	–	–
Strategy	Threshold strategy	○	○	–	–	–

PARAMETERS	Parameter contents	*A-1 *A-2	*B-1 *B-2	*C	*D-1 *D-2	*E
Options	Displayed when the following options are set for the selected test configuration “O Microperimetry test settings” (page 125) “O Fixation” (page 129)					
	Optional Color Fundus Image:Yes ----Color Fundus	*A-1: ○ -------- *A-2: –	–	–	*D-1: ○ -------- *D-2: –	○
	Refinement:Yes ----Refinement	○	○ (only Yes)	–	–	–
	Recheck:Yes ----Recheck Yes+collision check ---Recheck, Collision check	○	○ (*2)	–	–	–
	Pre-test:Yes ----Pre-test	○	–	–	–	–

*1 When the “Practice pattern type” parameter ((page 136)) is set to Automatic: Displays the specified pattern name. Manual: Manual display.

*2 When the “Recheck” parameter is set to Yes, “Recheck” is displayed (active). When it is set to Yes+collision check, “Recheck” is displayed (active) whereas “Collision check” is not (inactive).

3 Status

Displays the test status or result.

STATUS	Status / Result during the test	*A-1 *A-2	*B-1 *B-2	*C	*D-1 *D-2	*E
Tracking	Status of fundus tracking **Success**: Succeeded (green) **Failing**: Tracking failed (red)	○	○	–	○	○
Trigger	Response button status **Released**: Released (white) **Pressed**: Pressed (green)	○	○	–	–	–
Fixation Stability	Fixation status (fixation stability) Stable: Stable (green) **Relatively Unstable**: Relatively unstable (orange) **Unstable:** Unstable (red) *"3 Test information display area" (page 40)*	○	○	–	○	–
Elapsed	Elapsed test time m:ss (M:SS) m:ss: Time elapsed since the test screen is displayed. (M:SS): Time elapsed since microperimetry test or scotopic microperimetry test, or fixation test or scotopic fixation test is started.	○	○	–	○	○
Tracked	Total duration of the test (Excluding the time taken for alignment)	○	○	–	○	○
Remaining	Remaining time for the fixation test	–	–	–	○	–
Completion	Test progress Microperimetry test or scotopic microperimetry test n/N N: Total number of stimuli to be projected n: Number of the completed stimuli Fixation test / scotopic fixation test n%	○	○	–	○	–

STATUS	Status / Result during the test	*A-1 *A-2	*B-1 *B-2	*C	*D-1 *D-2	*E
False Positive	Result of the false positive test performed during the test: f /F F: Total number of times that the false positive test was performed. f: Number of times that the patient pressed the response button during the false positive test. Ex.: 0/3 The test was performed three times and the patient did not press the response button (green). Ex.: 1/3 The test has been performed three times and the patient pressed the response button once (red).	○	○	–	–	–
False negative	Result of the false negative test performed during the test: f /F F: Total number of times that the false negative test was performed. f: Number of times that the patient did not press the response button during the false negative test. Ex.: 0/3 The test was performed three times and the patient pressed the response button three times (green). 1/3: The test was performed three times and the patient failed to press the response button once (red).	○	○	–	–	–

4 Patient's eye display

Displays the image of the eye being tested.

5 Sensitivity scale

Indicates sensitivity levels and their corresponding display color for the microperimetry test or scotopic microperimetry test.

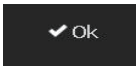
Not displayed for fixation test or scotopic fixation test and retinography.

6 Message field

Displays operating instructions for the test step by step from start to finish.

7 Operation buttons

Buttons to select the eye to be tested, move the chinrest up and down, set the test parameters, and perform operations such as cancellation of the test.

 Abort	Displays the confirmation message dialog box. Pressing the OK button in the confirmation message dialog box cancels the test and displays the HOME screen.
 Right	Eye selection: Right eye
 Left	Eye selection: Left eye
 OK	Proceeds to the next procedure.

Stop Stop	Displays the confirmation message dialog box. Pressing the OK button in the confirmation message dialog box ends the test and displays the test result confirmation screen.
	On the image deletion confirmation screen: Displays the confirmation message dialog box. Pressing the OK button in the confirmation message dialog box displays the test result confirmation screen.
Pause Pause	Pauses the test. Pressing the Resume button resumes the test.
Retake Retake*1	Returns to the eye front alignment and conduct color fundus image capture.
Take Take*1	After the microperimetry test or fixation test is canceled: Returns to the eye front alignment and captures the fundus image. When the “Optional Color Fundus Image” parameter is set to Yes: *“O Microperimetry test settings” (page 125)* *“O Fixation” (page 129)*
Accept Accept	When only retinography is performed: Captured image is sent to NAVIS-EX. When retinography is performed after microperimetry/fixation test (when the “Optional Color Fundus Image” parameter is set to Yes): Displays the test result confirmation screen.
	On the test result confirmation screen: Sends the test result to NAVIS-EX and moves to the View screen.
Discard Discard	When only retinography is performed: Displays the HOME screen. When retinography is performed after microperimetry/fixation test (when the “Optional Color Fundus Image” parameter is set to Yes): Displays the image deletion confirmation screen.
	On the test result confirmation screen: Deletes the test result and displays the HOME screen.
Settings Settings	Displays the setting screen.

*1: Unavailable for scotopic microperimetry test and scotopic fixation test

8 Eye indication

Indicates whether the eye being tested is right or left.

When the right or left is selected, icons are displayed and the icon of the tested eye is displayed in blue.

The indication can be toggled between R/L or OD/OS.

The default setting is OD/OS.

R (OD)	Right eye: When the right eye is selected, the icon is displayed in blue.
L (OS)	Left eye: When the left eye is selected, the icon is displayed in blue.

9 Patient information

Displays the ID, name, and age of the selected patient.

10 Auto function buttons

Auto functions for the test.

The functions are performed in the order starting from the top.

 Pupil Alignment	Eye front alignment Auto: Auto alignment Manual: Adjust with the joystick *"O Failure of auto alignment to the eye front" (page 55)*
 Retina Alignment	Aligns to the fundus Auto: Auto alignment Manual: Adjust with the joystick *"O Failure of auto alignment to the fundus" (page 56)*
 Retina Focusing	Adjusts focus on the retina Auto: Auto focus Manual: Adjusted with the focus knob. *"O Failure of auto focus to the fundus" (page 57)*
 Position Check	Alignment automatic check Automatically checks the eye and the device position. Functions when the retina alignment is set to Auto.
 IR Control	Adjustment of the fundus observation illumination intensity Auto: Automatic illumination control Manual: The illumination intensity is manually adjusted using the fundus observation illumination intensity knob. The setting switches to Manual mode when the fundus observation illumination intensity knob is operated in Auto mode.
 Autoshot*1	Autoshot function Auto: Automatic color fundus image capture Manual: Images are captured by the release button. When the "Optional Color Fundus Image" parameter is set to No, the Auto shot button is not displayed. *"O Microperimetry test settings" (page 125)* *"O Fixation" (page 129)*

*1: Unavailable for scotopic microperimetry test and scotopic fixation test

11 Process status

Indicates the status of each Auto function by color.

Gray *1,*2	Not yet performed
Green blinking icon*1	Being performed
Green *3	Performed The auto function button starts blinking when the button is pressed.
Red	Error is generated during processing.

*1: Each press of the auto function icon toggles between Auto and Manual.

*2: When the auto function name is displayed in gray, the function cannot be performed.

*3: The auto function button starts blinking when the button is pressed allowing each function to be manually performed. Pressing the button again switches to auto.

12 Auto indication

Indicates whether each function is set to Auto or Manual by color.

Blue	Auto The step is automatically performed.
Black	Manual The auto setting is canceled or cannot be performed.

13 Indicator

Indicates flash intensity, focus (Diopter), and fundus observation illumination intensity.

 *1	Sets and displays the flash intensity for color fundus image capture. To reduce intensity: Press ◀. To increase intensity: Press ▶.
	Displays fundus focus (Diopter). - Diopter direction: Press ◀ or turn the focus knob counterclockwise. + Diopter direction: Press ▶ or turn the focus knob clockwise.
	Indicates the fundus observation illumination intensity (infrared light). Adjustable when IR Control is set to manual. To reduce intensity: Turn the fundus observation illumination intensity knob counterclockwise. To increase intensity: Turn the fundus observation illumination intensity knob clockwise.

*1: Unavailable for scotopic microperimetry test and scotopic fixation test

14 Fixation target setting button

Pressing the button displays the fixation target settings at the bottom of the screen.

The shape, color, and size of the fixation target can be changed.

Shape Color Thickness Brightness Size Radius Size Distance	Press ▼ and select from the drop-down menu. *"O Microperimetry test settings" (page 125)* *"O Retinography" (page 128)* *"O Fixation" (page 129)* *"O Setting the scotopic microperimetry test" (page 132)* *"O Scotopic fixation" (page 134)*
Done Done	Pressing this button completes the settings and closes the fixation target settings.

2.2.5 EXAMS screen

The screen to display the test results of the selected patients.

This screen is displayed only when the device is connected to a PC over a LAN.

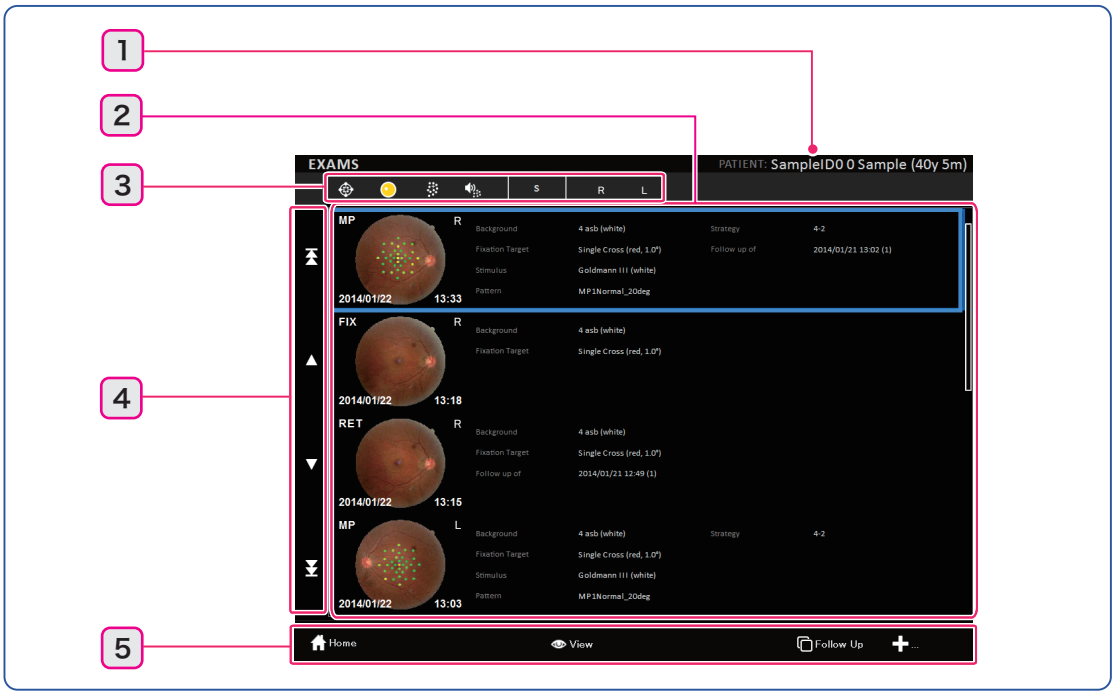
FollowUp can be performed by selecting past test results.

"3.6 FollowUp Test" (page 103)

How to display the EXAMS screen: *"2.2.2 HOME screen" (page 17)*

Note

- Depending on the operation status, the test buttons that are not necessary to be used are displayed in gray. The buttons displayed in gray are inactive.
- When the test has been conducted in the scotopic environment, the thumbnail image is indicated with a red frame.



1 Patient information

2 Test results

Displays the test results (image and test conditions).

3 Test result selection button

Pressing the button displays the selected test results.

Pressing the button selects or deselects the icon.

Selected: The icon or the outline of the icon is displayed in blue.

Deselected: The icon or the outline of the icon is displayed in white.

	Displays the microperimetry test or scotopic microperimetry test results.
	Displays the fundus image capture results.
	Displays the fixation test or scotopic fixation test results.
	Displays the selected result of the Feedback exam.
	Displays the selected result of the test in the scotopic environment.
	Displays the test results of the right eye.
	Displays the test results of the left eye.

4 Test list scroll buttons

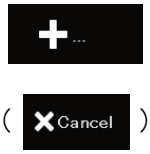
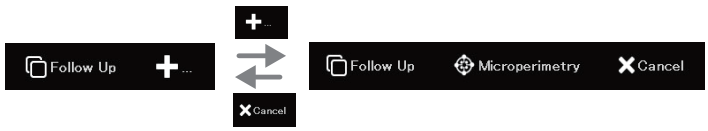
Buttons to scroll the test list.

	Displays the first page (the first test result).
	Moves up the test results by a page (displays the previous page).
	Moves down the test results by a page (displays the next page).
	Displays the last page (the most recent test result).

5 Operation buttons (EXAMS screen)

Buttons to view test results and perform FollowUp.

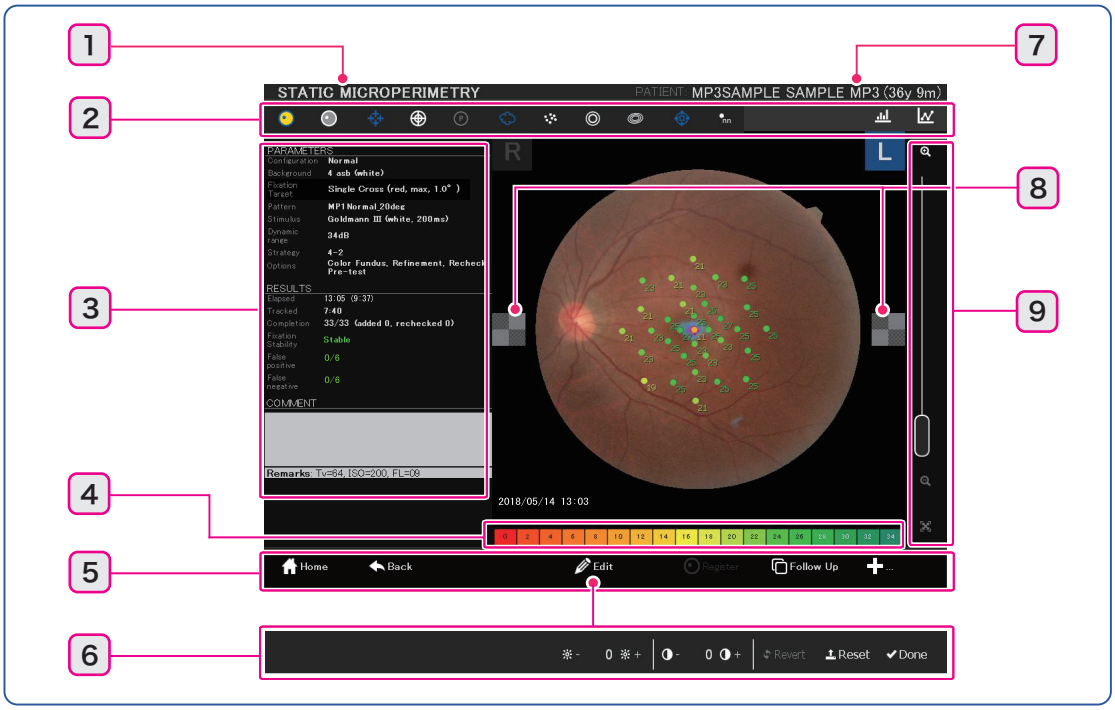
 Home	Displays the HOME screen.
 View	After selecting a test result, pressing this button displays the View screen.
 FollowUp	After selecting a test result, pressing this button performs FollowUp under the same conditions as the test result.

	Enlarges and displays the test icons.  When the icon is enlarged, only the enlarged icon is enabled.
 Microperimetry	Select the data containing color fundus images, then press this button to perform microperimetry or scotopic microperimetry test. Only available for the test data with color fundus images

2.2.6 View screen

The screen to display test results.

When the device is connected to a computer over a LAN, a FollowUp can be performed under the same conditions as the test data displayed on the EXAMS screen.



1 Test name

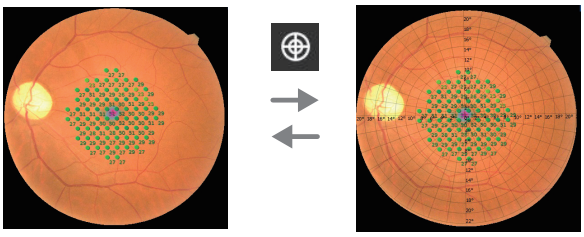
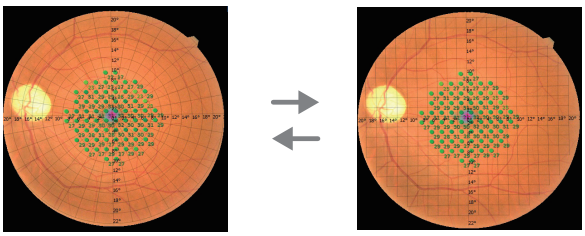
2 Test result image switch button

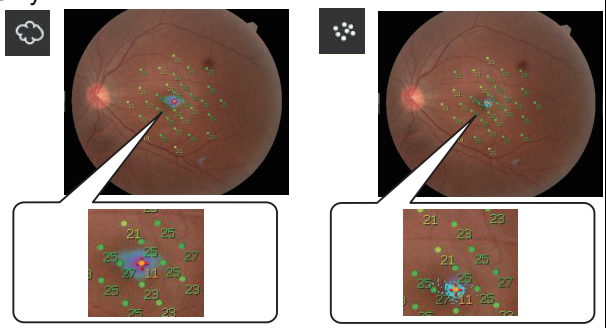
*A-1: STATIC MICROPERIMETRY: Microperimetry test *C: RETINOGRAPHY: Fundus image capture *D-1: FIXATION: Fixation test *E: FEEDBACK: Feedback exam.
The following tests are also available in the type S. *A-2: SCOTOPIC STATIC MICROPERIMETRY: Scotopic microperimetry test *D-2: SCOTOPIC FIXATION: Scotopic fixation test

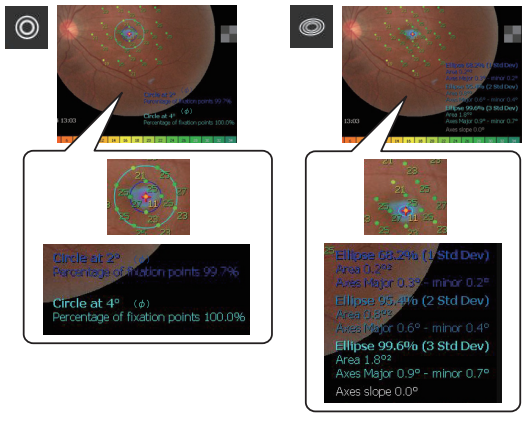
Pressing the button selects or deselects the icon.

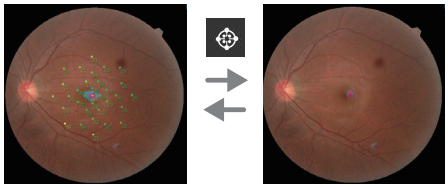
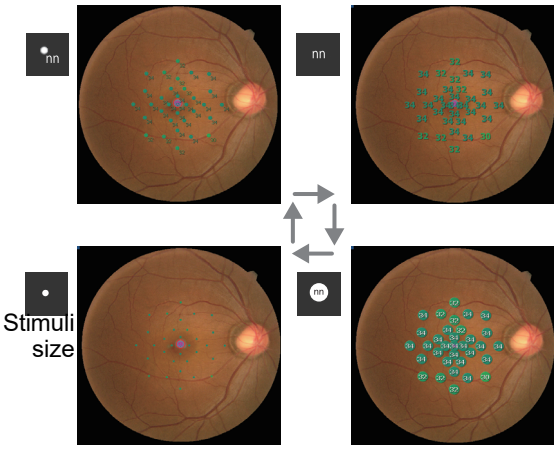
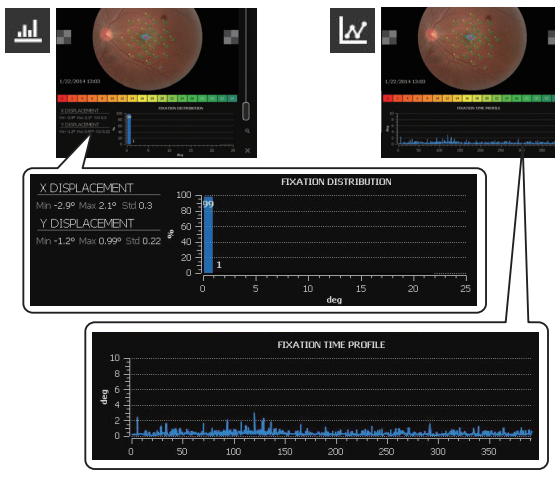
Selected: The icon or the outline of the icon is displayed in blue.

Deselected: The icon or the outline of the icon is displayed in white.

Button	Explanation	*A-1 *A-2	*C	*D-1 *D-2	*E
Color retinography	Press either button to toggle between the color fundus image and IR fundus image. Selecting one icon deselects the other icon. The icon is not displayed for the data with no color fundus image.	○	–	○	○
IR retinography		○	–	○	○
Planning image	Displays the reference color fundus image (Planning image). This icon is not displayed for data with no Planning image. This icon is not displayed for data with both Planning image and additional color fundus image. See the Note of *(Step 10)* in *"O Microperimetry test using color fundus image captured with MP-3" (page 84)*. For the test that has been registered manually, see the notes in *"3.7 Off-line Registration" (page 106)*.	○	–	–	–
Fixation target	Chooses whether or not to display the fixation target.	○	○	○	○
Grid	Whether or not to display the grid 	○	○	○	○
, Grid switching	Switches the grid When Ⓟ is pressed : Cartesian coordinate appears and the button changes to Ⓒ . When Ⓒ is pressed: Polar coordinate appears and the button changes to Ⓟ . 	○	○	○	○

Button	Explanation	*A-1 *A-2	*C	*D-1 *D-2	*E
Fixation heat map	Whether or not to display the fixation distribution color map or fixation point Fixation distribution color map: High density (Purple) ⟷ Low density (Blue) Fixation point display: Distribution is indicated by dots. Only one icon can be selected at a time. 	○	–	○	○
Fixation point					
TRL	Whether or not to display the TRL	–	–	–	○
Feedback stimulus	Whether or not to display the feedback stimulus	–	–	–	○

Button	Explanation	*A-1 *A-2	*C	*D-1 *D-2	*E
Stability circle BCEA circle	Whether or not to display the fixation circle and BCEA circle Fixation circle display: **Fixation Stability** result display Percentage of fixation points within the circles with 2° and 4° in diameter. <Display example> **Circle at 2° (ø)** **Percentage of fixation points 99.7%** **Circle at 4° (ø)** **Percentage of fixation points 100.0%** *"3 Test information display area" (page 40)* *"5.3 Glossary" (page 148)* BCEA display: Instability of the fixation point is indicated by size, area (angle of view), and major axis inclination of ellipses for three levels of standard deviation. <Display example> **Ellispe68.2% (1Std Div)** Ellipse that represents instability of fixation point within 68.2% **Area 0.2**°2 Ellipse area unit: (angle of view)2 **Axes Major 0.3° -minor 0.2°** **Major**: long axis diameter (radius) **Minor**: short axis diameter (radius) **Ellispe95.4% (2Std Div)** Ellipse that represents instability of fixation point within 95.4% **Area 1.8**°2 **Axes Major 0.9° -minor 0.7°** **Ellispe99.6% (3Std Div)** Ellipse that represents instability of fixation point within 99.6% **Area 1.8**°2 **Axes Major 0.9° -minor 0.7°** **Axes slope 0.0°** Major axis inclination of ellipses: displayed in the range of -90.0°to 90.0° 0.0 is a horizontal status *"5.3 Glossary" (page 148)* Only one icon can be selected at a time. 	○	–	○	–

Button	Explanation	*A-1 *A-2	*C	*D-1 *D-2	*E
Stimuli pattern	Whether or not to display the stimuli (microperimetry test or scotopic microperimetry test results) 	○	–	–	–
Stimuli data display	Changes the stimuli data display type of the stimuli (microperimetry test or scotopic microperimetry test) 	○	–	–	–
Fixation distribution graph Fixation time profile graph	Whether or not to display the Fixation distribution graph or Fixation time profile graph Fixation time profile graph: “Distance from the fixation center” vs “Instability rate” Distribution in the horizontal and vertical directions are indicated in “X DISPLACEMENT” and “Y DISPLACEMENT”. Min.: Lower left, Max.: Upper right, Std.: Standard deviation Fixation time profile graph: “Elapsed time” vs “Distance from the fixation center” Only one icon can be selected at a time. 	○	–	○	○

3 Test information display area

PARAMETERS: Parameter settings for each test.

"2.2.4 Test screen" *"2 Parameters" (page 25)*

Pattern:

Displays information when the stimuli arrangement pattern is rotated during microperimetry test or scotopic microperimetry test.

(nnn.n° rotation) ... The pattern is rotated by nnn.n°.

RESULTS: Test results display (No display for retinography).

"2.2.4 Test screen" *"3 Status" (page 27)*

Completion:

Displays information of additional test during microperimetry test or scotopic microperimetry test.

added N: Stimuli were added (N indicates the number of stimuli added).

rechecked N: Some points were retested (N indicates the number of points retested).

Fixation Stability: *"5.3 Glossary" (page 148)*

Stable (green): 75% or greater of all the fixation points are within the 2°(angle of view) circle.

Rel.Unstable (orange): Relatively Unstable; 75% or greater of all the fixation points exists within the 4°(angle of view) circle and less than 75% within the 2° circle.

Unstable (red): Less than 75% of all the fixation points exists within the 4°(angle of view) circle.

COMMENT: Comments for patient information (comment can be edited only when the device is connected to the PC via LAN)

In Remarks under the COMMENT field, capture information when a color fundus image is captured is displayed.

Remarks:Tv=64. ISO=200. FL=09

Tv: shutter speed, ISO: ISO sensitivity, FL: flash level

When the color fundus image becomes out of focus during the microperimetry test and the fixation test, the following message is displayed in the Remarks.

Warning: spherical correction modified for the fundus image acquisition.

4 Sensitivity scale

Indicates sensitivity levels and their corresponding display color for the microperimetry test or scotopic microperimetry test.

Not displayed for fixation test or scotopic fixation test, retinography, and feedback test.

5 Operation buttons (View screen)

Buttons to view test results and perform FollowUp.

 Home	Displays the HOME screen.
 Back	Displays the EXAMS screen. (Only when the device is connected to the PC via LAN.)
 Register	Off-line registration Available only for the test data for which no fundus image has been captured additionally. *"3.7 Off-line Registration" (page 106)*
 FollowUp	Performs FollowUp under the same conditions as the test result. (Only when the device is connected to the PC via LAN.)

[+] (Cancel)	Enlarges and displays the test icons.  Only the enlarged icons are enabled.
Microperimetry Microperimetry	Performs microperimetry test or scotopic microperimetry test. Only available for the test data with color fundus images
Feedback [Feedback]	Executes Feedback exam. Only available for Microperimetry test or scotopic microperimetry test
Edit Edit	Color fundus image editing Only available for the test data with color fundus images

6 Color fundus image editing

Pressing the Edit button displays the brightness and contrast adjustment buttons at the bottom of the View screen.

Brightness and contrast level: The level at the image capture is set as 0.

1 Brightness	Brightness adjustment range: -20 to +20 : Reduces brightness. : Increases brightness.
1 Contrast	Contrast adjustment range: -20 to +20 : Reduces contrast. : Increases contrast.
Revert Revert	Reverts the brightness and contrast to the previously saved settings.
Reset Reset	Resets the brightness and contrast to 0.
Done Done	Finishes the image editing and saves the current settings. The brightness and contrast adjustment buttons disappear and operation buttons are displayed again.

Note

- When the brightness and contrast are changed and saved, "*" mark is attached to the right of button. When the brightness and contrast is reset to the level at the image capture with the Reset Reset button, "*" mark disappears.

7 Patient information

8 LCD angle confirmation marks

Indicates whether or not the LCD touch-screen is at an appropriate angle to observe the test result image.

A checkered appearance of the LCD angle confirmation marks indicates that the operator is not viewing the display at the correct angle for appropriate observation. Change the viewing angle so that the marks appear evenly before observing the test results.

 : Checkered pattern	Inappropriate viewing angle
 : Even color	Appropriate viewing angle

9 Magnification slider

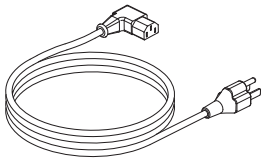
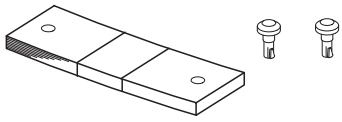
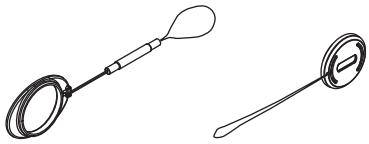
Enlarges the displayed test result image.

Pressing and dragging the enlarged image assist the examiner to observe the test results in details.

	Pressing this button enlarges the image.
	Moving up the slider enlarges the image. Moving down the slider reduces the image to its original size.
	Pressing the button reduces the image to its original size.
	Pressing this button displays the image in the original size (fitting the frame).

2.3 Packed Contents

■ The following are included in the standard configuration. Check the contents before use.

Part name	Quantity	Appearance
Response button Response button holder	1 unit for each	
Touch pen Pen stand	1 unit for each	
Power cord	1 unit	
Chinrest paper Chinrest paper pins (2 units)	1 set for each	
Magnetic forehead rest pad (The magnetic forehead rest pad does not come attached to the main body and is included in the packed contents.)	1 unit	
Cap holder Objective lens cap (The objective lens cap is attached on the objective lens at the time of shipment.)	1 unit for each	
Blower Dust cover	1 unit for each	
Operator's manual Quick reference guide	1 volume for each	
NAVIS-EX and license	1 unit	
“MP Viewer for NAVIS-EX” installation CD Operator’s manual	1 unit	

2.4 Initial Use

■ Install the device where the conditions specified in “Before Use” are satisfied.

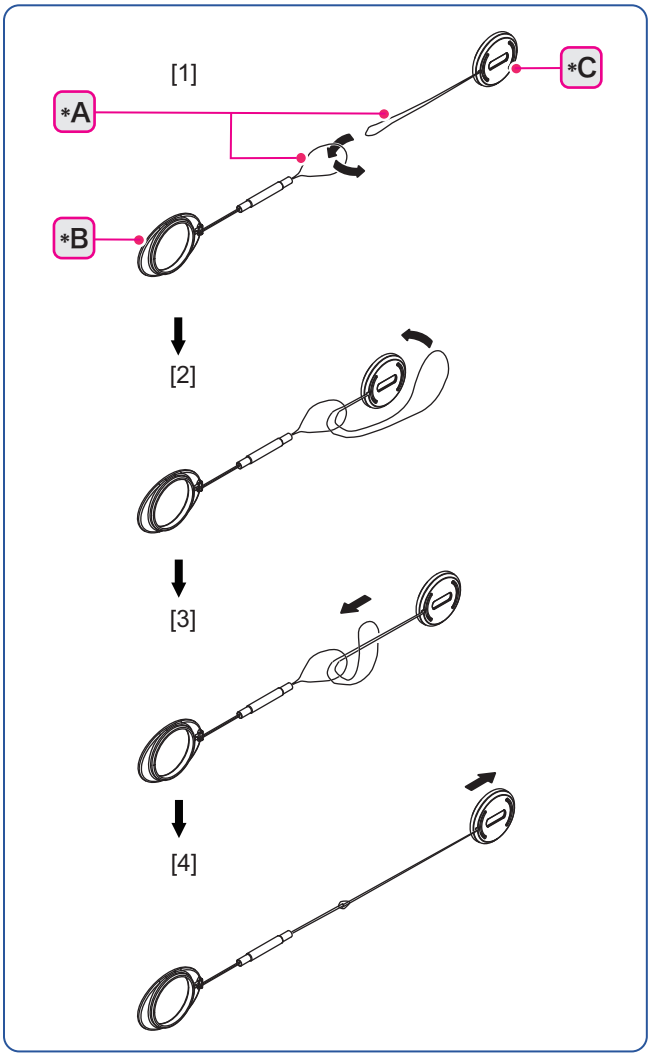
The following describes procedures to prepare for initial use of the device.

When connecting the device with a PC over a LAN, also see *“3.4 Connecting Other Devices” (page 60)*.

1 Install the device on a stable place.

2 Attach the cap holder according to the procedure below.

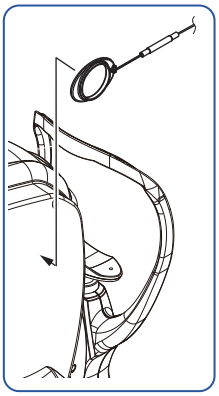
1) Tie the straps(*A) on the cap holder(*B) and the objective lens cap(*C) as shown to the right.



2) Adhere the cap holder on the right or left side of the device.

3) The cap holder is adhesive-backed. Adhere it after removing the paper backing.

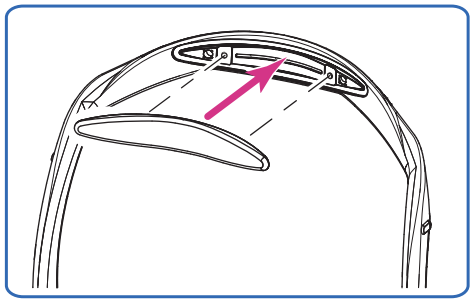
4) Place the objective lens cap on the objective lens when the device is not used, or the cap holder when the device is used.



3 Attach the magnetic forehead rest pad to the main body.

The magnetic forehead rest pad does not come attached to the main body and is included in the packed contents.

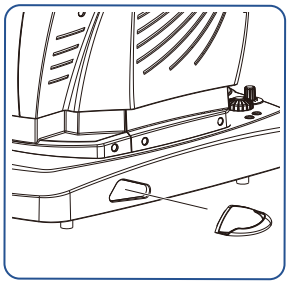
The magnetic forehead rest pad is attachable in the orientation as shown to the right.



4 Attach the response button holder to its receptacle on the side of the base.

Note

- The receptacle for the response button holder is magnetic, so the holder is attachable.



5 Connect the response button connector to the response button port.

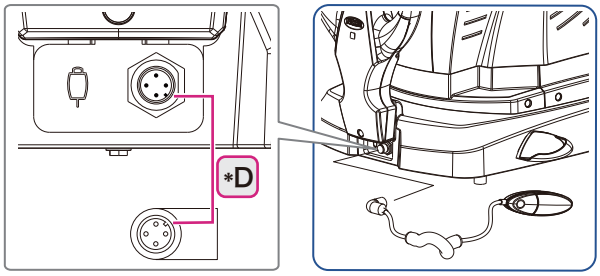
Note

- To firmly connect the connector, perform the following.

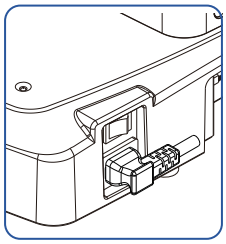
  (1) Align the guides (*D) of response button connector and port.

  (2) Insert the connector straight in.

  (3) Rotate the male screw of the terminal to completely insert the connector.



6 Connect the power cord to the inlet of the device.

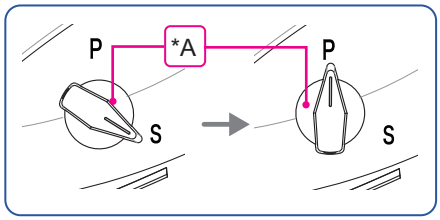


7 Confirm that the power to the device is turned off (○). Plug the power cord to the power outlet.

⚠ WARNING

- Be sure to use a grounded power outlet.
  Electric shock or fire may result from device malfunction or electric leakage.

8 When operating the type S model, confirm that the filter knob (*A) is on the “P” position. If it is on “S” position, turn the knob to the “P” position."



9 Turn on (|) power to the device.

Wait until the HOME screen appears.

When the power is turned on, the initialization screen briefly appears after several tens of seconds then changes to the HOME screen.

Note

- The LCD remains black for about one minute until the HOME screen is displayed. At this time the device is initializing. Do not turn off the power switch.

Initial screen

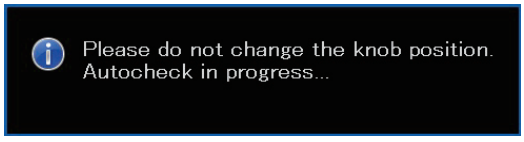
Note

For the type S, perform the following.

< When the filter knob is at "P" position >

When the device is turned on with the filter knob being at "P" position, the home screen is displayed and the following message appears approximately for five seconds. Start the operation after the message disappears.

Do not turn the filter knob to “S” position as long as the message remains on the screen.



- If the operator changes the knob position to “S” when the message remains on the screen, the following message appears and the operator is asked to restart the device.

  < Message >

  NIDEK Microperimeter device has encountered a problem and needs to be restarted.

  The problem seems to be caused by the following hardware module White Led, and the error number is 0071

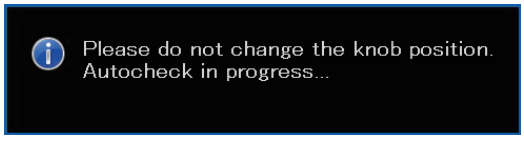
  If this is the first time you've seen this stop error screen, restart you device. If this screen appears again, please contact NIDEK Support Service. If requested, please report the above information.

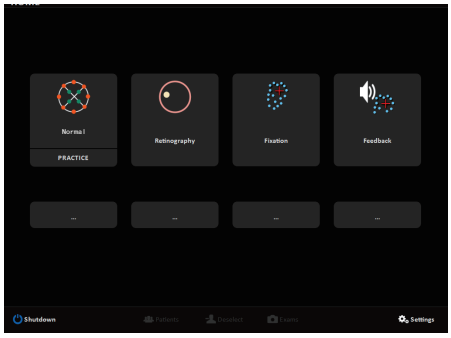
  Restarting procedure: Press [Shutdown]. Then, turn the knob to “P” position and turn on the device.

< When the filter knob is at "S" position >

When the device is turned on with the filter knob being at "S" position, the following message appears.

Changing the knob position to “P” as instructed by the message displays the home screen and the following message appears for approximately five seconds. Start the operation after the message disappears.





HOME screen

The device is now ready for use.

Note

- Set the parameters according to the use of the device. *"4.5 Parameter Settings" (page 121)*

3 OPERATING PROCEDURE

3.1 Operation Flow Chart

Turning on the device

"3.2 Preparation for Test" (page 50)
Turn on power to the device and change the settings as necessary.
Conduct patient preparation.

Test

"3.3 Basic Test Procedure" (page 52)
Select the test to be performed on the HOME screen.
"3.5.4 LAN connection: Microperimetry test" (page 67)
"3.5.5 Microperimetry test practice mode: PRACTICE" (page 87)
"3.5.6 LAN connection: Retinography" (page 91)
"3.5.7 LAN connection: Fixation test" (page 93)
"3.5.8 LAN connection: Feedback exam." (page 95)

Test conducted in scotopic environment (only type S)
"3.8 Basic Test Procedure (Test in Scotopic Environment)" (page 108)
"3.8.1 LAN connection: Scotopic microperimetry test" (page 110)
"3.8.2 Practicing the Scotopic microperimetry test (PRACTICE)" (page 111)
"3.8.3 LAN connection: Scotopic fixation test" (page 112)

Checking and saving test results

"3.3 Basic Test Procedure" (page 52) (Step 8) (Step 9)

Test conducted in scotopic environment (only type S)
"3.8 Basic Test Procedure (Test in Scotopic Environment)" (page 108) (Step 6) (Step 7)

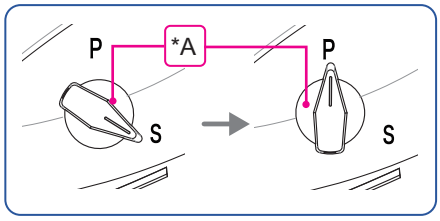
Turning off the device

"3.3.2 Shutdown" (page 58)
"3.5.2 LAN connection: Completion of test" (page 62)

Test conducted in scotopic environment (only type S)
"O Finishing the test (Test in Scotopic Environment)" (page 109)

3.2 Preparation for Test

1 When operating the type S model, confirm that the filter knob (*A) is on the “P” position. If it is on “S” position, turn the knob to the “P” position.

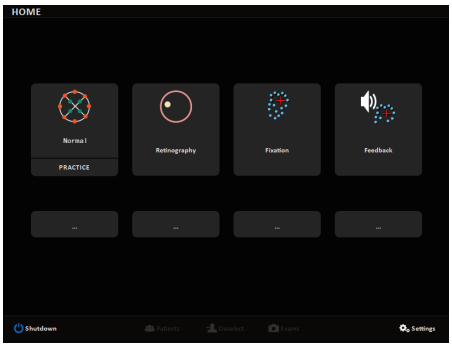


2 Turn on (|) power to the device.

Wait until the HOME screen appears.

When the power is turned on, the initialization screen briefly appears after several tens of seconds. When the power is turned on, the measuring unit makes a slight movement in all directions to determine the initial position for the measuring unit.

Then the HOME screen appears.



Note

- The LCD remains black for about one minute until the HOME screen is displayed. At this time the device is initializing. Do not turn off the power switch.

3 Remove the objective lens cap.

4 Perform checks before use.

Before using the device, check the following points:

- No error message appears.
- The objective lens is clean.
- The examiner operates the device with the buttons on the HOME screen.
- The examiner can switch the test environment to the scotopic environment by turning the filter knob.

  If any abnormalities occur, immediately stop using the device and perform remedies in accordance with *“4.1 Troubleshooting” (page 113)*.

5 For the test conducted in the scotopic environment, see *“3.8 Basic Test Procedure (Test in Scotopic Environment)” (page 108)*.

6 Conduct patient preparation.

Note

- The examiner can register the patient only when the system is connected to the computer with LAN.

  “3.4 Connecting Other Devices” (page 60), *“3.5.3 Patient registration” (page 63)*

1) Provide the patient with the purpose and procedures of the test.

Note

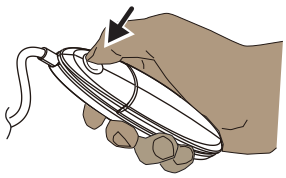
- Instruct the patient to focus on the fixation target projected in front of their eye during the test.

  If the patient moves their face or eyes frequently, the test results may be affected. In addition, this cause the test to pause, resulting in longer test time.

- Instruct the patient to do the following when performing the microperimetry test.

  Hold the response button with either hand easy to press, and press down on the depressed portion with the thumb.

  While focusing on the fixation target, the patient should press the response button when they see a stimulus around the target. (Do not press and hold the response button.)



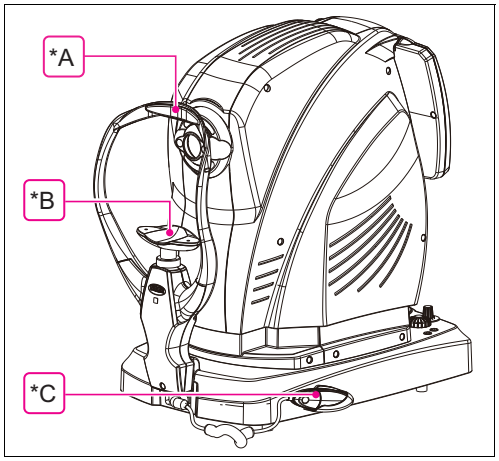
- A short press produces a short beep and a long press produces a long beep (1.5 seconds). After a long beep sounds, instruct the patient not to press and hold the button.

  After a long beep sounds, the button becomes inactive until released.

  If the Sound parameter is set to Off, no beep sounds. *"System1/4" (page 137)*, Volume

2) Wipe the forehead rest(*A), chinrest(*B), and response button(*C) with a clean cotton swab or gauze dampened with rubbing alcohol.

3) For the microperimetry test, instruct the patient to hold the response button.



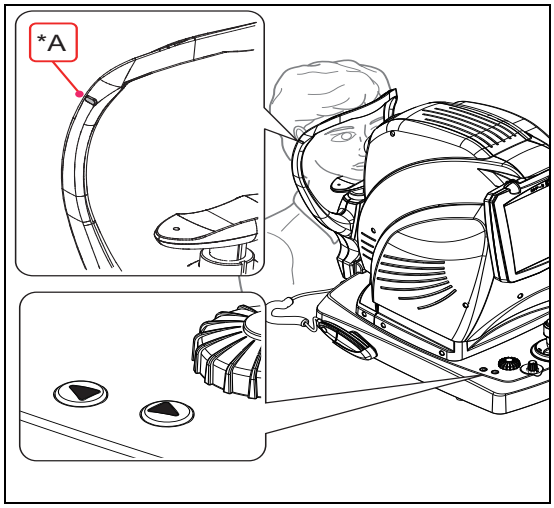
4) Instruct the patient to place their chin fully onto the chinrest and lightly press their forehead against the forehead rest.

5) Inform the patient that the chinrest is going to move.

6) Use the chinrest up/down buttons (▲ , ▼) to align the height of the patient's eyes with the eye level marker (*A).

   Align the height while observing the patient.

   When performing rough alignment, instruct the patient to release their face from the forehead rest and chinrest.



Note

- Do not allow extraneous illumination to come into the patient's field of vision.

  Testing in an environment that is too bright may affect the test results due to the patient's pupil failing to dilate enough.

3.3 Basic Test Procedure

1 Select the test to be performed on the HOME screen.

Details of each test

“3.5.4 LAN connection: Microperimetry test” (page 67)

“3.5.5 Microperimetry test practice mode: PRACTICE” (page 87)

“3.5.6 LAN connection: Retinography” (page 91)

“3.5.7 LAN connection: Fixation test” (page 93)

“3.5.8 LAN connection: Feedback exam.” (page 95)

2 Press the Right ◄Right or Left Left ► button to select the eye to be tested.

The message below is displayed in the message field.

Select Eye and Adjust chin rest
Press Right or Left to select the patient’s eye; use the chin rest controls to adjust the chin rest.
When finished, press OK.

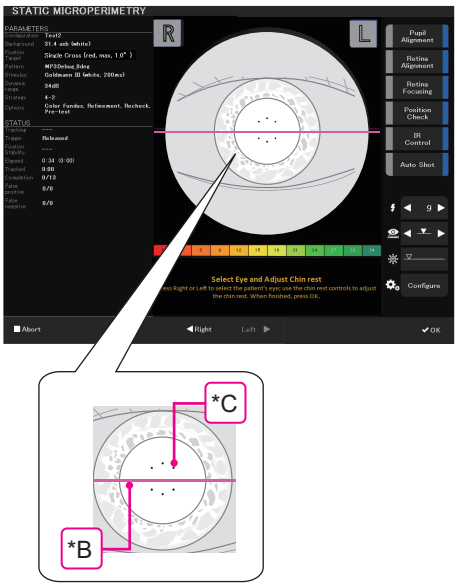
The main unit moves to the selected eye side.

⚠ CAUTION

- Before pressing the button, instruct the patient to keep their face, hand, or fingers away from the main unit and the measuring unit.

  Hands or fingers may be pinched or the patient's face may contact the unit.

3 Press the chinrest up/down buttons (▲, ▼) to align the center of the alignment guide spots(*C) with the eye level marker(*B).



4 Press the OK [Ok] button.

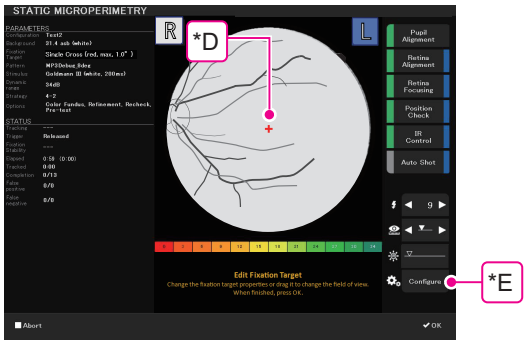
The eye indication of the eye being tested turns blue, and auto alignment to the eye front starts.

When the alignment completes, the process proceeds to the next step.

For procedures for manual operation or when operation errors occur, refer to *"3.3.1 Procedures when operation errors occur" (page 55)*.

Step	Message field	
Pupil Alignment Pupil Alignment	Automatic Pupil Alignment in progress...	Auto alignment to the eye front
↓		The screen changes to the fundus observation screen.
Retina Alignment Retina Alignment	Automatic Retina Alignment in progress...	Auto alignment to the fundus
↓		
Retina Focusing Retina Focusing	Automatic Focus in progress...	Auto focus to the fundus
	↓	
	Automatic Retina Alignment in progress...	Auto alignment to the fundus Functions when the fundus alignment is set to Auto.
↓		
Position Check Position Check	Automatic Alignment Keeping in progress...	Positioning to the fundus Auto tracking to fundus alignment Functions when the fundus alignment is set to Auto.
IR Control IR Control	–	Automatic illumination control of the fundus observation illumination (infrared light). Operates after auto (or manual) focusing. The illumination intensity can be manually adjusted using the fundus observation illumination intensity knob.

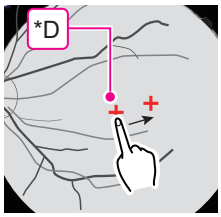
After the steps above are all complete, the fixation target (*D) appears on the fundus observation image.



The message below is displayed in the message field.

Edit Fixation Target
Change the fixation target properties or drag it to change the field of view.
When finished, press OK.

5 Drag the fixation target *(D) on the fundus observation screen to display the desired fundus area to be tested.



Note

- When the fixation target is moved beyond its projection range, the mark ( ) appears next to the fixation target. When dragging is canceled (finger or the touch pen is released from the screen), the mark ( ) disappears and the fixation target automatically returns to a position where it can be projected.

6 If necessary, change the fixation target shape with the fixation target setting button(*E).

“ *1: Unavailable for scotopic microperimetry test and scotopic fixation test” (page 31)

7 Press the OK [Ok] button.

Start the selected test.

The test is temporarily discontinued if the patient’s eye position largely shifts. In this case, see “ *Procedure for when the position of the eye is largely shifted during the test” (page 72)* and take proper measures.

8 After the test is complete, check the test result.

9 Press [Accept] ([Accept]).

The test result is displayed on the View screen.

10 Press the Home [Home] button.

The HOME screen appears.

11 To conduct the next test, start from the *(Step 5)* in *“3.2 Preparation for Test” (page 50)*.

To finish the test, see *“3.3.2 Shutdown” (page 58)*.

Note

- With the “Chinrest: Initialization” parameter set to On *(page 138)*, the chinrest position automatically initializes when the test is started, canceled, or finished. Be sure to instruct the patient to move back their head from the chinrest in advance.

3.3.1 Procedures when operation errors occur

This section describes the procedures for each auto function when an operation error occurs before the test.

When an error occurs, auto setting is paused.

Note

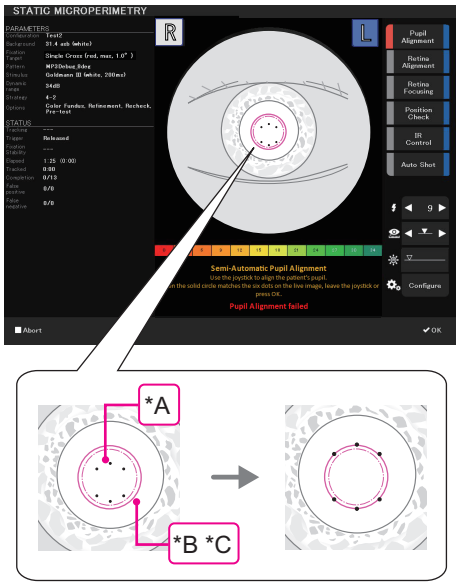
- Failure of auto alignment to the eye front or fundus may be caused by the following. To prevent or reduce the failure, properly instruct the patient.
  - Patient moved their face.
  - Patient moved their eyes frequently without gazing the fixation target.

○ Pupil Alignment Failure of auto alignment to the eye front

The message below is displayed in the message field, and auto alignment is paused.

Semi-Automatic Pupil Alignment
Use the joystick to align the patient's pupil.
When the solid circle matches the six dots on the live image, leave the joystick or press OK.
Pupil Alignment failed

Follow the message and perform the alignment in the procedures below.

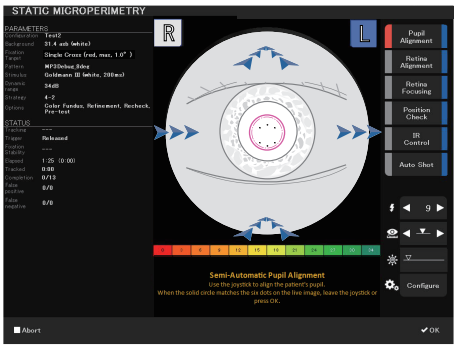


1) Align the six alignment guide spots (*A) around the alignment circle (*B) using the coarse adjustment control, joystick, and joystick knob.

*B	Alignment circle (solid line) Displayed only for the manual alignment. Set the alignment position by aligning the guide spots.
*C	Required pupil diameter mark (dashed line) Displayed only for the manual alignment. The mark indicates the required pupil diameter of 4 mm.

When the main unit and measuring unit exceed the movable range, the limit mark (blue arrows) appears.

Operate the coarse adjustment control, joystick, and joystick knob in the direction indicated by the arrows.



/	Up / Down
/	Right / Left
/	Forward / Backward

2) Release the coarse adjustment control and joystick, or press the OK [✔ Ok] button.

The screen changes to the fundus observation screen for auto alignment to the fundus.

○ Retina Alignment Failure of auto alignment to the fundus

The message below is displayed in the message field, and auto alignment is paused.

> **Semi-Automatic Retina Alignment**
> Check the patient position and use the joystick to align the patient's retina.
> When the two spots are focused and centered on the live image, leave the joystick or press OK
> **Retina Alignment failed**

Follow the message and perform the alignment in the procedures below.

1) Move the measuring unit forward or backward using the coarse adjustment control and joystick to the position where the optical working dots can be seen most clearly.

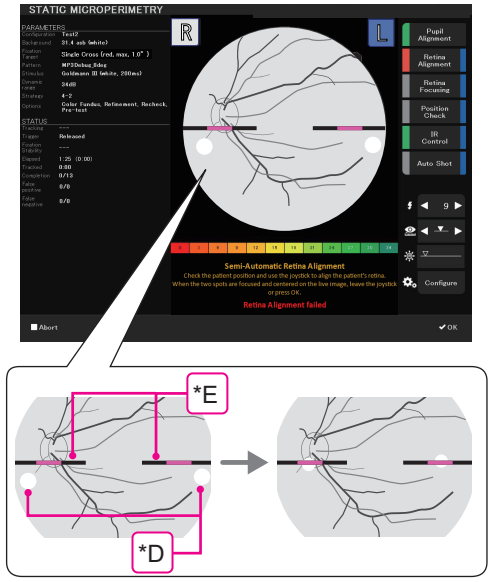
   The optical working dots are a pair of two blinking lights.

   When the main unit and measuring unit exceed the movable range, the limit mark (blue arrows) appears.

   "O Failure of auto alignment to the eye front" (page 55)

   Operate the coarse adjustment control, joystick, and joystick knob in the direction indicated by the arrows.

2) Operate the coarse adjustment control, joystick, and joystick knob so that the right and left optical working dots (*D) are at symmetrical positions on the optical working dot charts (*E).



3) Release the coarse adjustment control and joystick, or press the OK [✔ Ok] button.

   The auto focus to the fundus starts.

○ Retina Focusing Failure of auto focus to the fundus

When the auto focus cannot be performed, the message window appears on the screen.

The auto focus has failed or the refractive error of the eye is outside the auto focus range.

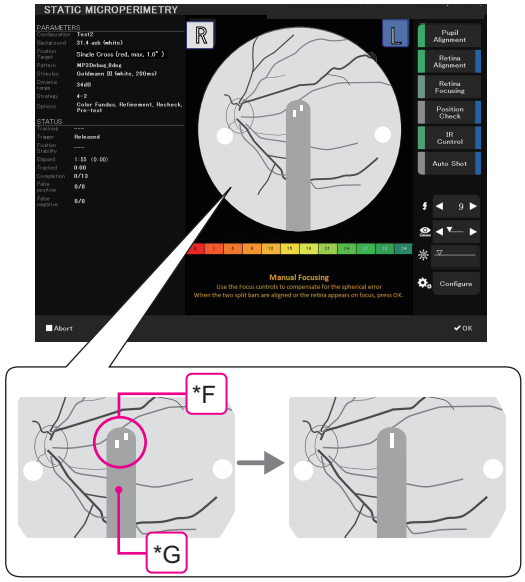
Note

- When the Split bar--Show parameter is set to “No”, the focus bar is not displayed.
  In this case, manually adjust the focus with the diopter correction lens or pause the test and set the parameter to ON again.

Parameter setting “O System1/4” (page 137)

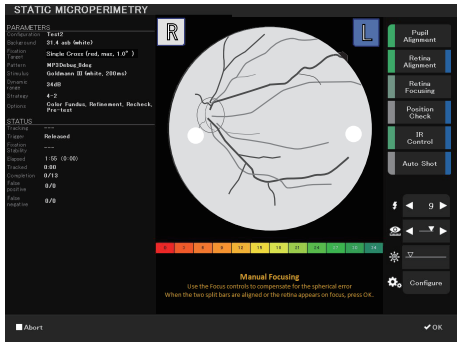
● To manually adjust the focus without diopter correction lens

1) Press the No button in the message dialog box.
   Manually adjust the focus.
2) Perform the following so that the upper and lower lines of the focus split (*F) form a single line.
   The focus split is displayed on top of the focus bar (*G).
   - Rotate the focus knob.
   - Press ◀ or ▶ of the focusing indicator ( ).
3) Press the OK Ok button.
   The fixation target positioning starts.



● To manually adjust the focus with diopter correction lens

1) Press the Yes button in the message dialog box.
   The focus bar disappears from the fundus screen and the focus split is not displayed.
2) Observe the fundus image and adjust the focus as follows:
   - Rotate the focus knob.
   - Press ◀ or ▶ of the focusing indicator ( ).
3) Press the OK Ok button.
   The fixation target positioning starts.



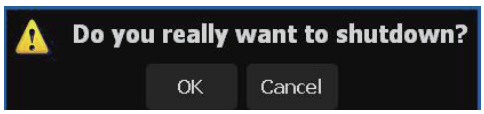
3.3.2 Shutdown

○ Normal shut down

1 On the HOME screen, press the Shutdown 

button.

The shutdown confirmation message appears.



2 Press the OK button.

- LCD touch-screen: Blacks out (back light is turned off.)
- The main and measuring units return to their standard positions.

3 Wait until the pilot LED starts to blink and the beep sounds.

Note

- Until the device can be turned off, the LCD becomes black. However, as the device is processing the startup, do not turn off the power off by mistake until the LED blinks and a beep sounds.

4 Turn off (○) power to the device.

Note

- Three beeps sound for three times when the pilot LED starts blinking. The beeps continue to sound until the power is turned off.

5 Place the objective lens cap on the objective lens.

6 Clean the forehead rest, chinrest, and response button, then place the dust cover on the device.

Wipe with a clean cotton swab or gauze dampened with rubbing alcohol.

Keep the device clean for the next use.

Note

- Be sure to always place the dust cover on the device when the device is not used.

○ Finishing the test when the device is transported

When transporting the device, set the device to packing mode. In Packing mode, the measuring unit and chinrest are automatically set to the position specified for transport.

1 In the same manner as in *"○ Normal shut down"*, turn off (○) power to the device.

2 While pressing and holding the chinrest down button (▼), turn on (|) power to the device.

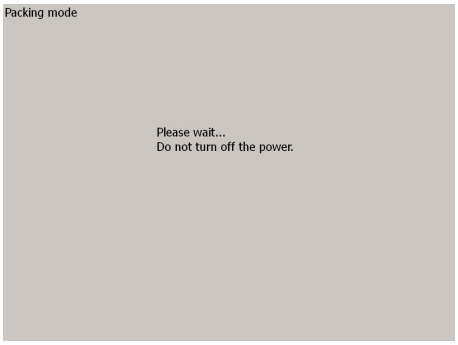
Continue to hold the chinrest down button until a long beep sounds (about 10 seconds).

When the device is started and enters packing mode, a message in the right screen is displayed and the chin-rest and the measurement part are positioned at the bottom.

Message:

"Please wait...

Do not turn off the power."



Note

- While the message "Please wait... Do not turn off the power." is displayed, do not turn off the power.

3 When the messages shown to the right appears, press the Shutdown button on the screen.

- LCD touch-screen: Blacks out (back light is turned off.)

Message:

"This device is now ready to be packed.

Please press the Shutdown button.

Shut down the system.

(After the pilot LED has blinked,

please turn off power.)"

Note

- When the filter knob is on "S" position with the type S model, the message "Remove the scotopic filter." appears in the lower left of the screen.
  In such a case, turn the filter knob to "P" position and press [Shutdown].

4 Wait until the pilot LED starts to blink.

Note

- Until the device can be turned off, the LCD becomes black. However, as the device is processing the startup, do not turn off the power off by mistake until the LED blinks and a beep sounds.

5 Turn off (○) power to the device.

6 Place the objective lens cap on the objective lens.

7 Remove the response button, power cord, and various connection cables from the device.

8 Clean the forehead rest, chinrest, and response button.

Wipe with a clean cotton swab or gauze dampened with rubbing alcohol.

9 Pack the device in the packing material supplied at the time of purchase.

3.4 Connecting Other Devices

■ The MP-3 is meant to be used over a LAN network with a PC running the NAVIS-EX and provided MP Viewer for NAVIS-EX (hereinafter, MP Viewer) installed.

For the installation method and use of NAVIS-EX and MP Viewer, refer to the operator's manual of each software.

⚠ CAUTION

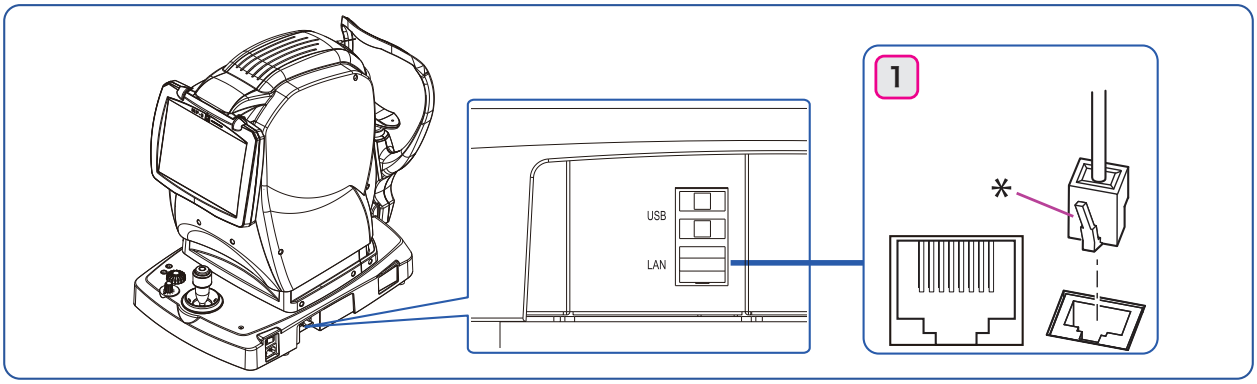
- If the device is connected by LAN to other devices such as an external PC via a network of the medical facility, do not connect the device to a network that can connect to the Internet.

  Be sure to configure the local network only with related devices such as the PC to which NAVIS-EX is installed. NIDEK will not assume responsibility or compensate for damages caused by any virus infection and development.
- When connecting the MP-3 over a LAN, use a network hub.

  Otherwise proper communication may not be performed.
- Be sure to turn off power to a device when connecting a LAN cable.

  Malfunction may result if a LAN cable is connected with the power turned on.

3.4.1 Computer connection procedure



Vertically insert the cables of each device in the correct orientation.

Remove the LAN cable (Fig. 1) while holding down the locking clip indicated by "*".

Note

- To connect the device to a network (LAN), set parameters of the device and PC after consultation with the network administrator of the facility. Only authorized service personnel are allowed to perform the connection procedures.
- When not set to be connected to LAN (*"O System 2/4" (page 139)*), do not connect the LAN cable to the PC. The operation may become slow.

⚠ CAUTION

- When NAVIS-EX is set to IP address mode and the MP-3 is connected over a LAN without using a network hub, turn on the MP-3 first and then the PC.

  NAVIS-EX cannot be activated properly.

3.5 Operation Procedures When the Device is Connected over a LAN

3.5.1 LAN connection: Preparation for test

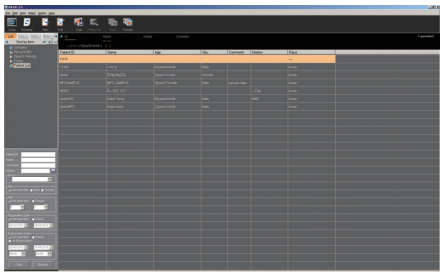
1 Turn on the computer.

2 Start up NAVIS-EX on the computer.

The login dialog box appears.

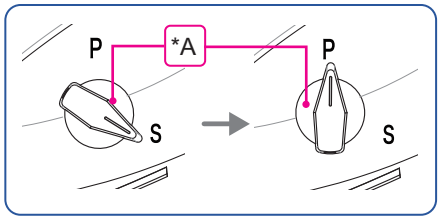
3 Enter a user name and password, then click Login.

The NAVIS-EX Patient List screen appears on the computer screen.



NAVIS-EX Patient List screen

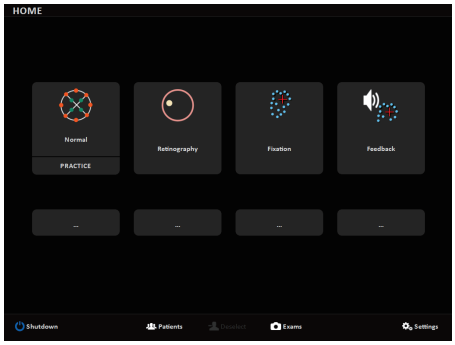
4 When operating the type S model, confirm that the filter knob (*A) is on the “P” position. If it is on “S” position, turn the knob to the “P” position.



5 Turn on (|) power to the device.

Wait until the HOME screen appears.

When the power is turned on, the initialization screen briefly appears after several tens of seconds then changes to the HOME screen.



Note

- The LCD remains black for about one minute until the HOME screen is displayed. At this time the device is initializing. Do not turn off the power switch.

6 For the test conducted in the scotopic environment, see *“3.8 Basic Test Procedure (Test in Scotopic Environment)” (page 108)*

7 Register / Select a patient ID to be tested from the HOME screen.

1) Press the Patients button.

The PATIENTS screen appears.

2) Press the patient to be tested on the PATIENTS screen.

The applicable patient is outlined in blue.

To register a new patient, press the New button. *"3.5.3 Patient registration" (page 63)*

3) Press the Select button.

The HOME screen appears.

Note

- Pressing the Select button may display the message to the right.

The Image List screen of the same patient is opened or the same patient information is edited in NAVIS-EX. Display the Patient List screen in NAVIS-EX.

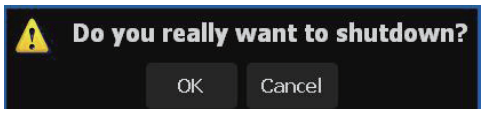
8 Conduct patient preparation.

"Preparation for Test" (page 50) *(Step 5)*

3.5.2 LAN connection: Completion of test

1 On the HOME screen, press the Shutdown button.

The shutdown confirmation message appears.



2 Press the OK button.

- LCD touch-screen: Blacks out (back light is turned off).
- The main and measuring units return to their reference positions.

3 Wait until the pilot LED starts to blink and the beep sounds.

Note

- Until the device can be turned off, the LCD becomes black. However, as the device is processing the startup, do not turn off the power off by mistake until the LED blinks and a beep sounds.

4 Turn off (○) power to the device.

Note

- Three beeps sound for three times when the pilot LED starts blinking. The beeps continue to sound until the power is turned off.

5 Shut down NAVIS-EX on the computer.

6 Shut down the computer and turn off power.

7 Place the objective lens cap on the objective lens.

8 Clean the forehead rest, chinrest, and response button, then place the dust cover on the device.

Wipe with a clean cotton swab or gauze dampened with rubbing alcohol.

Keep the device clean for the next use.

Note

- Be sure to always place the dust cover on the device when the device is not used.

3.5.3 Patient registration

This section describes the patient registration procedures.

1 Press the New button on the PATIENTS screen.

The new patient registration screen appears.

2 Enter the patient information and press the Save button.

The patient information is registered and the PATIENTS screen appears.

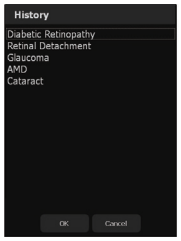
To cancel the registration, press the Cancel button.

Note

- Once the patient is registered, they cannot be edited or deleted on the device. Edit or delete the data on NAVIS-EX.
- The patient can also be registered with NAVIS-EX. For the method of patient registration, refer to the NAVIS-EX Operator's Manual.
- If the patient information is not displayed on the upper right on the screen, the patient is not selected. Select the patient again.

○ Patient information entry items

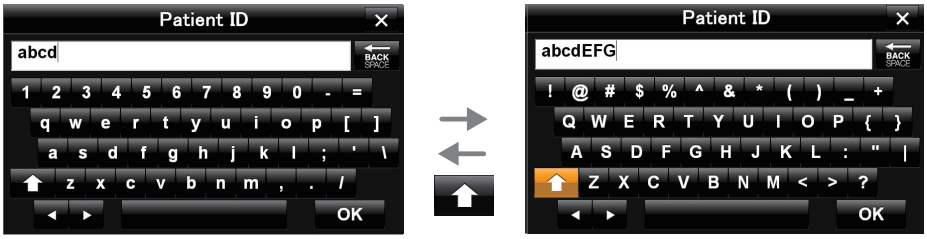
Patient ID	Pressing the field displays the keyboard. Use the keyboard for entry. "● *Patient ID entry: How to use the keyboard" (page 64)*
First Name	Pressing each field displays the keyboard. Use the keyboard for entry. "● *Inputting last name, first name, comment, and history using keyboard" (page 65)*
Middle Name	
Last Name	

Date of Birth	Pressing the Date of Birth field displays the date entry window. "● *Entering the date of birth" (page 66)*
Race	Pressing the entry field displays a pull-down menu. Select the applicable race.
Sex	☐Male ☐Female ☐N/S: Touch the corresponding field (check mark is placed).
History	There are two ways of entry. Entry using the keyboard Pressing the field displays the keyboard. Use the keyboard for entry. "● *Inputting last name, first name, comment, and history using keyboard" (page 65)* Selecting from the History list Pressing the Select ... Select ... to the right of the entry field displays the History list.  After selecting the disease name, press the OK button.
Comment	Pressing the field displays the keyboard. Use the keyboard for entry. "● *Inputting last name, first name, comment, and history using keyboard" (page 65)*

- Patient ID entry: How to use the keyboard

1) Press the entry field.

The keyboard appears.



Alphabet lowercase characters / Numbers

Alphabet uppercase characters / Symbols

Patient ID entry keyboard

2) Use the keyboard for entry.

Shift ( ) key: Switches the characters.

Lowercase characters / Numbers ←→ Uppercase characters / Symbols

(,) keys: Moves the cursor. (The cursor can be moved by directly pressing the entered character.) Moves and selects the characters. (Only when uppercase keyboard is used.)

BACKSPACE key: Deletes the input characters. Move the cursor to delete characters.

button: Cancels the entry. Pressing this button closes the keyboard and cancels the entry.

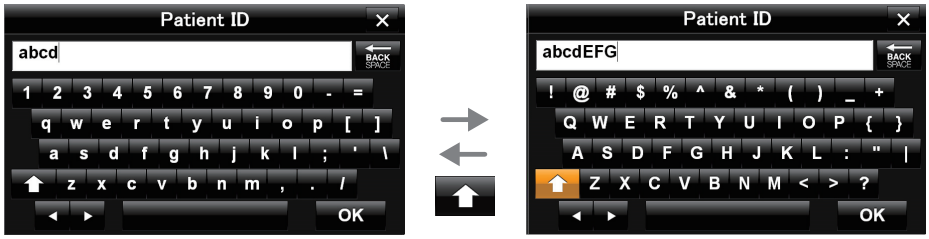
3) Press the OK key.

Closes the keyboard and displays the entered information in each field.

- Inputting last name, first name, comment, and history using keyboard

1) Press the entry field.

The keyboard appears.



Alphabet lowercase characters / Numbers Alphabet uppercase characters / Symbols

2) Use the keyboard for entry.

Shift ( ) key: Pressing the key switches the characters.

Alphabet lowercase characters / Numbers ←→ Alphabet uppercase characters / Symbols

, keys: Moves the cursor. (The cursor can be moved by directly pressing the entered character.) Moves and selects the characters. (Only when uppercase keyboard is used.)

BACKSPACE key: Deletes the input characters. Move the cursor and delete characters.

button: Cancels the entry. Pressing this button closes the keyboard and cancels the entry.

3) Press the OK key.

Closes the keyboard and displays the entered information in each field.

- Entering the date of birth

1) Press the entry field.

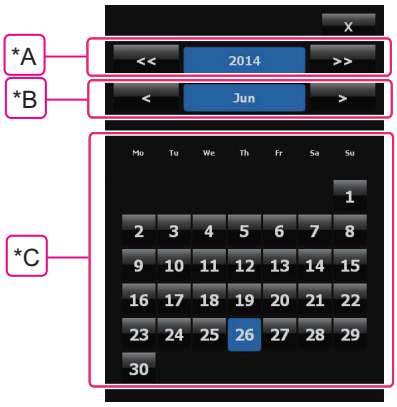
The calendar to enter the date of birth is displayed.

2) Select the date of birth.

Select in the order of year(*A), month(*B), and day(*C).

To cancel the entry, press X .

"March 4, 1954" is selected in the following procedures as an example.



(1) Select the year of birth.

There are two ways to enter.

Select from forward/back

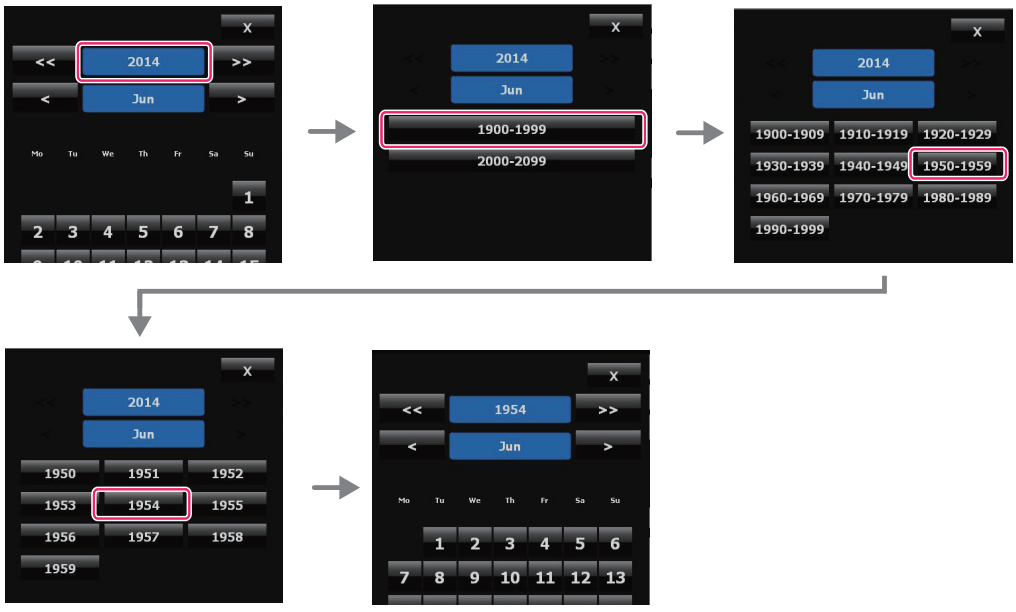
<< button: back one year

>> button: forward one year

Search by year

Press the year button and select the desired year from the displayed list.

The example below shows how to select the year 1954.



(2) Select the month of birth.

There are two ways to enter.

• Select from forward/back

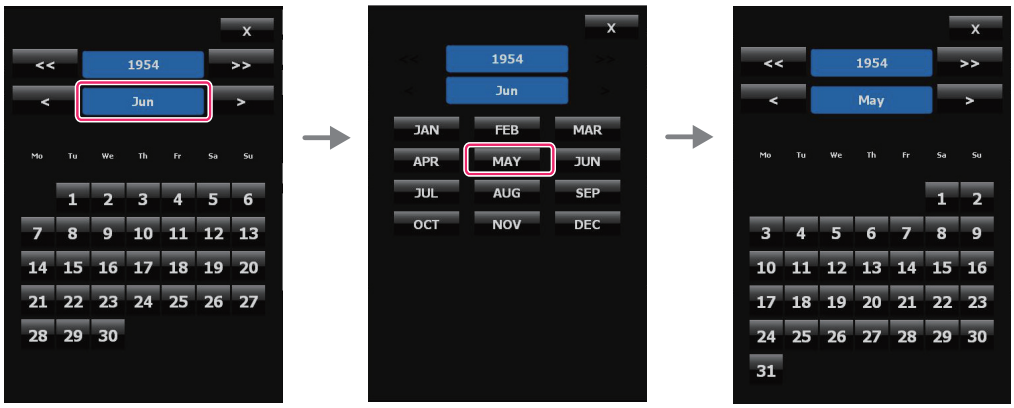
< button: back one month

> button: forward one month

• Selecting the month from the list

Press the month button and select the desired month from the displayed list.

The example below shows how to select “May”.



3) Select the date of birth.

The calendar disappears and the date of birth is displayed in the Date of Birth field.

3.5.4 LAN connection: Microperimetry test

1 Select the microperimetry test “STATIC MICROPERIMETRY”.

- When testing with the default test configuration

1) Press  .

The STATIC MICROPERIMETRY screen appears.

- When testing with other registered configuration

1) Press [...] button.

The registered configuration appears.

2) Select the desired configuration.

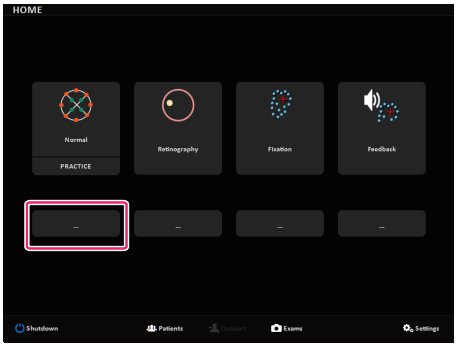
Use the scroll bar (*A) to see all configuration.

3) Press the Start Exam (✔Start Exam) button.

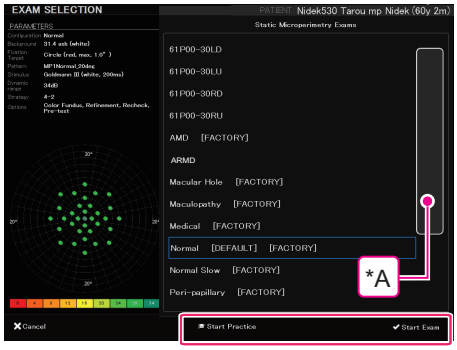
The STATIC MICROPERIMETRY screen appears.

To perform practice and test continuously, press the Start Practice (Start Practice) button. *“3.5.5 Microperimetry test practice mode: PRACTICE” (page 87)*

1)



2) 3)



2 Perform *(Step 2)* to *(Step 6)* in *“3.3 Basic Test Procedure” (page 52)*.

3 Press the OK [Ok] button.

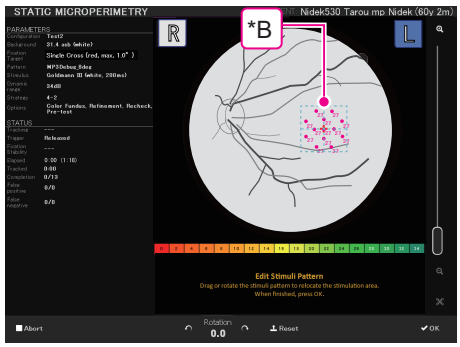
Perform the auto alignment to the fundus again.

For Manual, see *"3.3.1 Procedures when operation errors occur" (page 55)*.

Step	Message field	
Retina Alignment	Automatic Retina Alignment in progress...	Auto alignment to the fundus
	↓	
–	Automatic selection of Tracking Reference Image in progress...	Acquiring reference image for fundus tracking
	↓	
–	Coordinate system calibration in progress...	Coordinate calibration A beep sounds. Instruct the patient to focus on the fixation target.

- When the patient's eye movement is stable

After the steps above (coordinate calibration) are complete, the stimuli pattern(*B) is displayed on the acquired IR fundus image (reference image for fundus tracking).



The message below is displayed in the message field.

Edit Stimuli Pattern
Drag or rotate the stimuli pattern to relocate the stimulation area.
When finished, press OK.

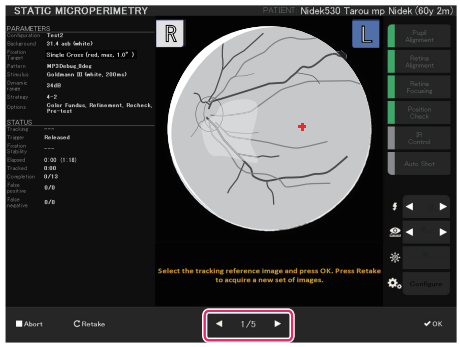
↓

Proceed to *(Step 4)*.

- When the patient's eye movement is unstable

When the patient's eye movement is unstable, the above steps (coordinate calibration) are stopped. Select one IR fundus image (reference image for fundus tracking) among five of them.

◀ ▶ buttons: Toggles from 1/5 to 5/5.



The message below is displayed in the message field.

> Select the tracking reference image and press OK. Press Retake to acquire a new set of images.

Follow the message and perform either of the procedures below.

Select the desired IR fundus image and press the OK [✔Ok] button.

Sets the selected image as the reference image for fundus tracking and conducts coordinate calibration.

Press the Retake [CRetake] button.

Performs auto alignment for the coordinate calibration again.

When the stimuli pattern is displayed on the IR fundus image (reference image for fundus tracking) and the following message is displayed in the message field, proceed to *(Step 4)*.

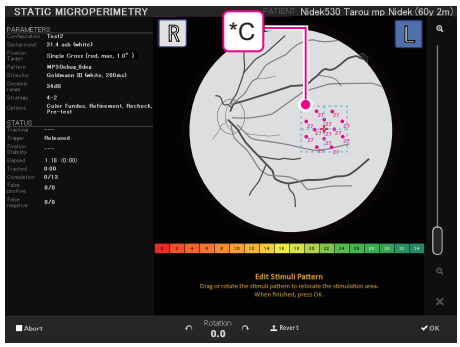
> **Edit Stimuli Pattern**
> Drag or rotate the stimuli pattern to relocate the stimulation area.
> When finished, press OK

When the Pattern type is set to Automatic, the stimuli pattern is displayed as shown above. When the Pattern type is set to Semi-automatic, Manual or Peri-papillary, the operator sets the stimuli projection range and the stimuli number for each test.

"O Stimuli arrangement pattern (Pattern type): Semi-automatic/Manual/Peri-papillary" (page 79)

"O Microperimetry test settings" (page 125)

4 Drag the square(*C) on the fundus image to move the stimuli arrangement pattern to the desired position.

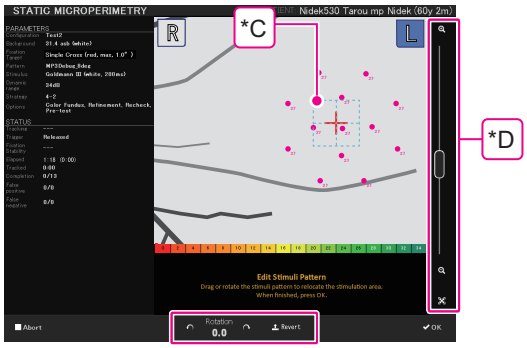


Note

- Dragging outside of the square moves the entire fundus image.

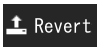
- Fine adjustment of stimuli arrangement pattern position

1) Enlarge the image with the magnification slider(*D). *(page 42)*
2) Finely adjust the position by dragging the square(*C).



- Rotating stimuli arrangement pattern

1) Use  or  button to rotate the stimuli arrangement pattern.

	Pressing this button rotates the pattern counterclockwise by 0.1°.
	Pressing this button rotates the pattern clockwise by 0.1°.
	Pressing the button resets the rotation (0.0°) and pattern position.
	Indicates the rotation degree: 0.0 to 359.9° (counterclockwise)

Rotation information is added to “Pattern” on the left side of the screen.

“3 Test information display area” (page 40)

Note

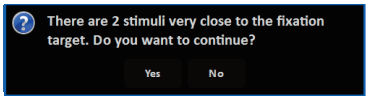
- When a part of stimuli arrangement pattern is outside the fundus area, pressing OK displays the following message in the message field.

  ex.) Eleven points of stimuli are outside the fundus area and cannot be projected.

When the test is continued, the stimuli that cannot be projected are displayed as “ × ”.

- When “Yes+collision check” is selected for the Recheck parameter *(page 126)*, the points overlapped with the fixation target blink. Pressing the OK button displays the following message.

  ex.) Two points are overlapped with the fixation target.



Yes: Continues the test.

Inform the patient that the test will start, and press the Yes button.

(Step 5) (Step 6)

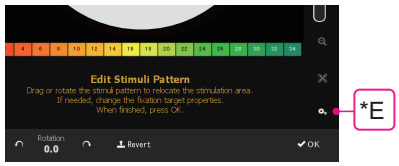
No: Adjusts the stimuli arrangement pattern and fixation target.

The message window disappears and the message below is displayed in the message field.

Edit Stimuli Pattern
Drag or rotate the stimuli pattern to relocate the stimulation area.
If needed, change the fixation target properties.
When finished, press OK.

Follow the message and perform adjustment.

If necessary, change the fixation target shape with the fixation target setting button(*E).



“14 Fixation target setting button” (page 31)

After adjustment, press OK:

Inform the patient that the test will start, and press the OK button. (Step 5) (Step 6)

5 Inform the patient that the test will start. Instruct them to press the response button when they see a stimulus.

6 Press the OK [Ok] button.

The stimuli are projected on the fundus, and the test starts.

Exam in progress...

↓

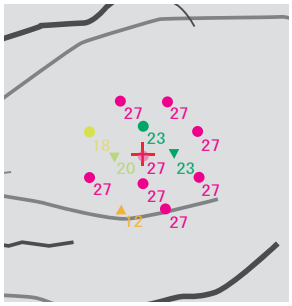
Automatic Alignment Keeping in progress... (*1)

↓

Exam in progress...

*1: Indicates that Position Check is being performed. This procedure is not performed in manual mode.

During the test, the projection status of the stimuli is displayed in the center of the screen. The response button operation status is displayed in the status display on the left side of the screen.

	Pink: Points that have not been tested. The number indicates the luminance.
	Other colors: Points that have been tested or are being tested. The color corresponds with the color of the sensitivity scale. ● : Points that have been tested (the response button was pressed). ○ 0 : Points that have been tested (the response button was not pressed). ▲ : Points being tested. The luminance of the next projection is increased to the displayed luminance. ▼ : Points being tested. The luminance of the next projection is decreased to the displayed luminance. × : Projection cannot be performed. *(Step 4) Note*
	The point being projected is blinking.
	STATUS Trigger Released: Response button is not pressed (white) Pressed: Response button is pressed (green)

- To pause or resume the test

1) Press the Pause [Pause] button.

The test is paused.

The message below is displayed in the message field.

Exam Paused
Press Resume to restart.

2) Press the Resume [Resume] button.

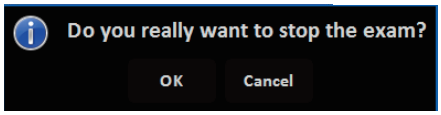
The test is resumed.

- To cancel the test

1) Press the Stop ■Stop button.

The test is canceled.

The confirmation dialog box to cancel the test appears.



2) Press the OK button.

The test results until the cancellation are displayed.

Note

- When the color fundus image capture function is set to Yes, the Take Take button is displayed under the screen. The color fundus image is captured by pressing the Take button.
- Pressing the Cancel button in the confirmation dialog box resumes the test. Before resuming the test by pressing the Cancel button, let the patient know that the test is going to resume.

3) To save the test result, press the Accept ✔Accept button.

To discard the test result, press the Discard ✕Discard button.

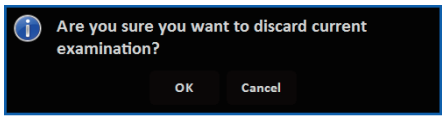
Accept: Saves the test result and displays the View screen.

The auto tracking is canceled and the main unit and measuring unit return to their reference positions.

↓

Proceed to *(Step 10)*.

Discard: The discard confirmation dialog box is displayed.



↓

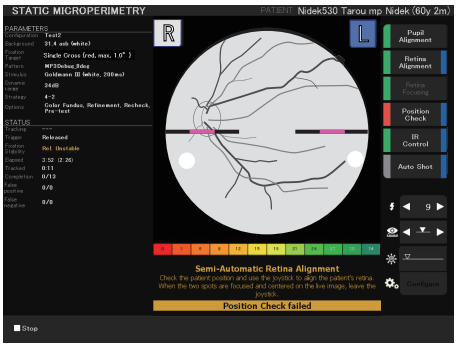
OK: Discards the test result and displays the HOME screen.

Cancel: Returns to the test result screen.

- Procedure for when the position of the eye is largely shifted during the test

The test is paused and the fundus alignment screen appears. The message below is displayed in the message field.

The message in yellow, “Position Check failed”, blinks and the beeps continue to sound.



Note

- If the Sound parameter is set to Off, no beep sounds.

“O System1/4” (page 137), Volume

Semi-Automatic Retina Alignment

Check the patient position and use the joystick to align the patient’s retina.
When the two spots are focused and centered on the live image, leave the joystick.

Position Check failed

1) Use the coarse adjustment control, joystick, and joystick knob to correct the alignment.

“O Failure of auto alignment to the fundus” (page 56)

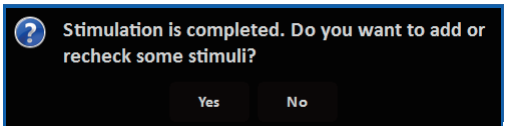
2) Release the coarse adjustment control and joystick.

The beep stops and the test resumes.

3) If the patient's eye is largely shifted during the test and the same message as above is displayed again, conduct above steps 1) and 2) to continue the test.

- Finishing the test

When the test finishes, the confirmation dialog box asking whether or not to perform the additional test appears.



1) When additional stimuli are not necessary, press "No". When additional stimuli are necessary, press "Yes".

No: No additional test is necessary.

When the "Optional Color Fundus Image" parameter is set to Yes, proceed to color fundus image capture.

When the parameter is set to No, finish the test and proceed to *(Step 10)*.

For the "Optional Color Fundus Image" setting, see *"O Failure of auto alignment to the fundus" (page 56)*.

The following is the procedure to capture color fundus images with the "Optional Color Fundus Image" set to Yes.

• When color fundus image capture is automatically performed (*"10 Auto function buttons" (page 30)*)

Exam in progress...

↓

Automatic Retina Alignment in progress...

↓

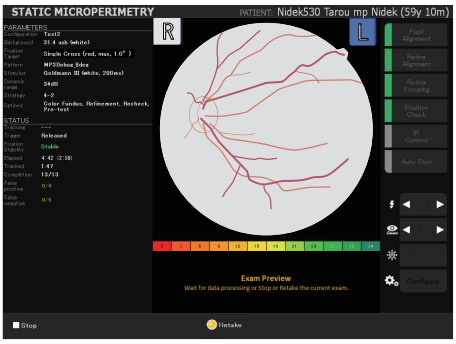
Capturing fundus image
Image acquisition, please wait...

↓

Exam Preview
Wait for data processing or Stop or Retake the current exam.

The retinography preview screen (simple display) is displayed.

Proceed to *(Step 7)*.



Retinography preview screen (simple display)

• When color fundus image capture is manually performed

Press the release button by following the message below.

Grab the fundus image
Press the joystick button to take a picture.

Yes: Additional test is necessary.

The additional test screen appears.

"O Additional test" (page 76)

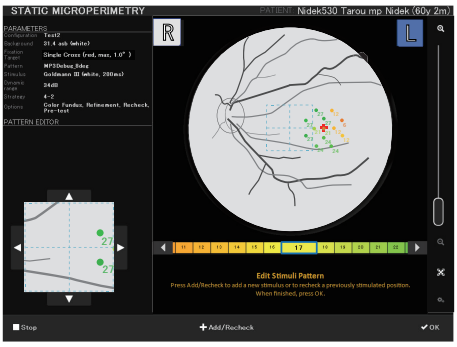
After additional test, when the "Optional Color Fundus Image" parameter is set to Yes, proceed to color fundus image capture.

"O Microperimetry test settings" (page 125)

"O Fixation" (page 129)

The capture procedure is the same as "No": No additional test.

When the "Optional Color Fundus Image" parameter is set to No, finish the test and proceed to *(Step 10)*.



Additional test screen

7 When the captured image is satisfactory, wait until the preview screen appears. When the captured image is not satisfactory, press the Retake Retake button.

Note

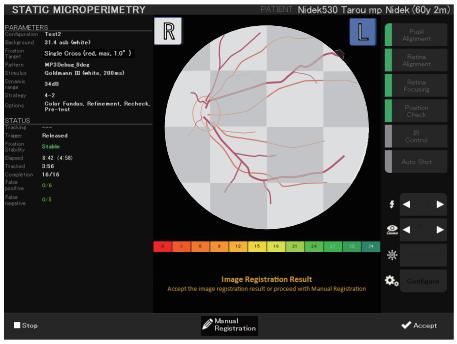
• When the color fundus image cannot be captured satisfactorily, see *" The home screen is displayed." (page 98)*.

● Wait: The captured image is satisfactory.

The retinography preview screen (detail display) is displayed.

Proceed to *(Step 8)*.

The IR fundus image and color fundus image from the test are overlaid and displayed with a checkerboard background.

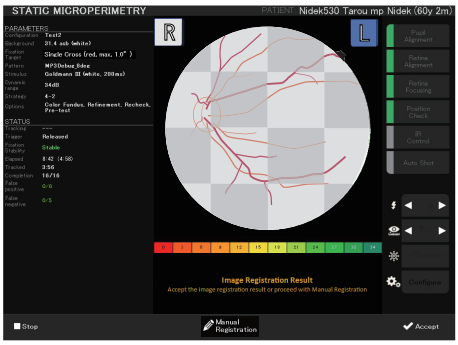


Retinography preview screen (detail display)

● Retake: The captured image is not satisfactory.

The fundus image capture is performed again and the retinography preview screen (simple display) is displayed.

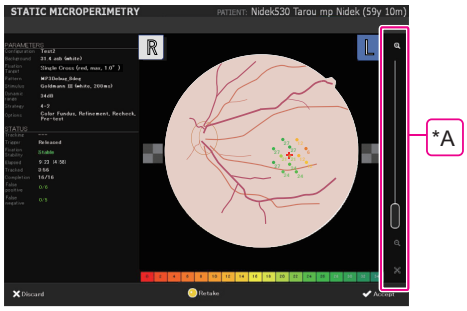
8 Confirm that the images overlaid in the checkered pattern (IR and color fundus images) are properly aligned by observing the blood vessel alignment.



9 After checking the alignment, proceed to the next step with the following buttons.

- Accept: Accept: Alignment is proper.

  The test result confirmation screen with the color fundus image overlaid is displayed.



Test result confirmation screen

1) To check the image, change the displayed position by dragging the image or use the magnification slider(*A) to enlarge the image for observation.

2) After the image is checked, proceed to the next operation with the following buttons.

Accept: Saves the test result and displays the View screen.

The auto tracking is canceled and the main unit and measuring unit return to their reference positions.

↓

Proceed to *(Step 10)*.

Discard: The discard confirmation dialog box is displayed.

"● *To cancel the test" (page 72)* Step 3)

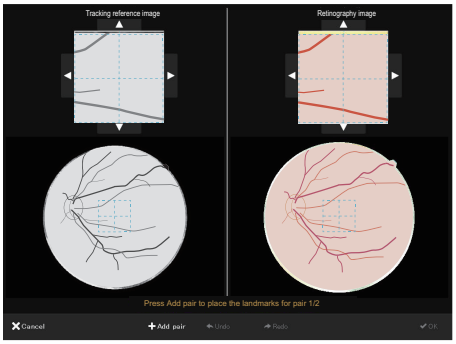
Retake: Captures an additional color fundus image.

"Retake" in *(Step 7)*: The captured image is not satisfactory.

- Manual Registration: Manual Registration: Alignment needs to be corrected.

The manual registration screen appears.

"O Manual registration" (page 78)

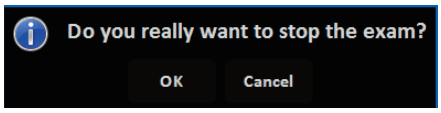


Manual registration screen

- ■Stop Stop: Cancels the test.

  The confirmation dialog box to cancel the test appears.

  "● *To cancel the test" (page 72)*



10 Check the test result in detail on the View screen.

"2.2.6 View screen" (page 35)

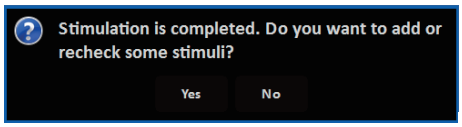
11 Press the Home 🏠Home button.

The HOME screen appears.

○ Additional test

The following is the procedure to conduct the test on some specified points again or to add additional stimuli when the microperimetry test is complete.

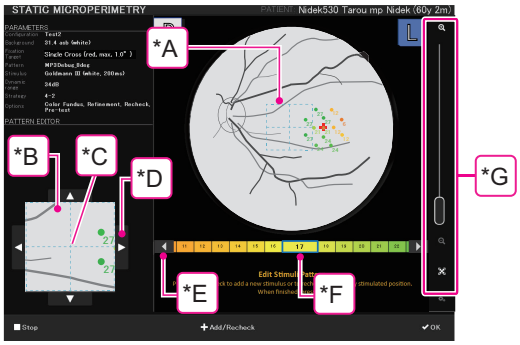
In Step 6 of *"3.5.4 LAN connection: Microperimetry test" (page 67)*, the confirmation dialog box asking whether or not to add more stimuli appears.



1 Press the Yes button.

The additional test screen appears.

The area outlined with the dotted squares on the fundus image is enlarged and displayed in the lower left of the screen.



Note

- The zoom on the enlarged screen can be changed with the parameter setting.

  High precision pointing view zoom factor: 1x / 2x / 4x-----2x is the default.

  "4.5.3 Application setting" (page 136)

2 To adjust the position precisely, enlarge the image with the magnification slider (*G) *(page 42)*.

The image on the enlarged screen is also magnified along with the fundus image.

3 Drag the square(*A) on the fundus image or enlarged screen(*B) so that the center of the square (*C) is aligned with the position desired to be tested.

Note

- Dragging outside of the square moves the entire fundus image.

4 Finely adjust the position by pressing ◀, ▶, ▲, or ▼ (*D).

5 Select the initial luminance by pressing the sensitivity scale.

When the desired luminance is not displayed, press ◀ or ▶ (*E) to move the scale.

The selected luminance is outlined in blue(*F).

6 Press the Add/Recheck + Add/Recheck button.

The added or recheck stimulus is displayed as a point to be projected (in pink) in the center of the square.

7 Repeat *(Step 3)* to *(Step 6)* as many times as necessary to the desired number of points.

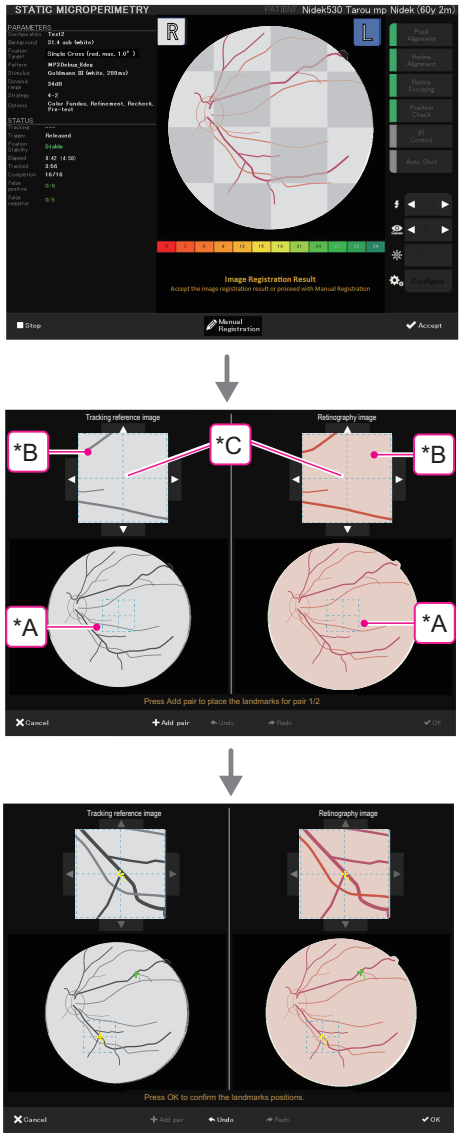
8 Press the OK ✔ Ok button.

Only the set points are tested.

When the test is complete, the confirmation dialog box appears again.

○ Manual registration

The following is the procedure to correct the alignment between the acquired IR fundus image and color fundus image when color fundus image is captured after the microperimetry test. The manual registration can also be performed in the fixation test and Feedback exam.



1 Press the Manual Registration [Manual Registration] button on the retinography preview screen (detail display).

The manual registration screen appears.

2 For the IR fundus image and color fundus image, drag the square(*A) on the fundus image or enlarged screen(*B) so that the center of the square(*C) is aligned with a mark (Landmark) position of each image.

"O Additional test" (page 76)

Guideline of the mark (Landmark): junction or crossing point of vessels.

3 Press the Add pair [+Add pair] button.

The first mark has been specified.

4 Repeat *(Step 2)* to *(Step 3)* to specify the second mark.

To respecify the mark:

[Undo] Undo: Deletes the landmark.

[Redo] Redo: Displays the squares at the previous position.

5 Press the OK [Ok] button.

The retinography preview screen (detail display) appears.

The alignment of the images has been corrected.

○ Stimuli arrangement pattern (Pattern type): Semi-automatic/Manual/ Peri-papillary

When microperimetry test is performed with the test configuration whose Pattern type is Semi-automatic, Manual or Peri-papillary, the operator sets the stimuli projection area and the number of stimuli for each test.

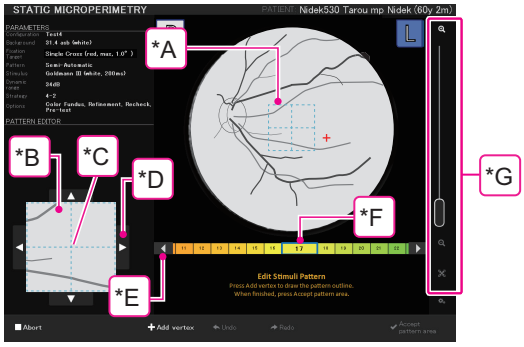
● Semi-automatic

Specify the stimuli projection area and the number of stimuli to be projected for the test.

1) Perform *(Step 1)* to *(Step 3)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

The stimuli projection setting screen is displayed.

The area outlined in the dotted squares on the fundus image is enlarged and displayed in the lower left of the screen.



Note

- The zoom on the enlarged screen can be changed with the parameter setting.
  High precision pointing view zoom factor: 1x / 2x / 4x----------2x is the default.
  "4.5.3 Application setting" (page 136)

The message below is displayed in the message field.

> **Edit Stimuli Pattern**
> Press Add vertex to draw the pattern outline.
> When finished, press Accept pattern area.

2) To adjust the position precisely, enlarge the image with the magnification slider (*G) *(page 42)*.

The image on the enlarged screen is also magnified along with the fundus image.

3) Drag the square(*A) on the fundus image or enlarged screen(*B) so that the center of the square(*C) is aligned with the position to be the stimuli projection area.

Note

- Dragging outside of the square moves the entire fundus image.

4) Finely adjust the position by pressing ◀, ▶, ▲, or ▼ (*D).

5) Press the Add vertex [+Add vertex] button.

6) Repeat *(Step 3))* to *(Step 5))* to define the stimuli projection area.

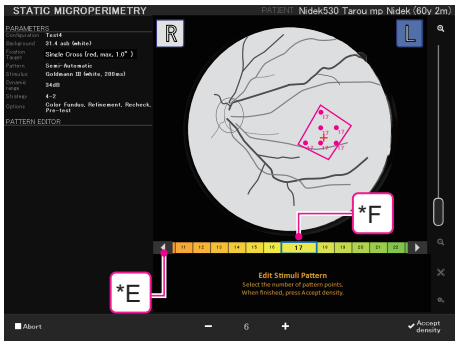
To respecify the mark:

[Undo] Undo: Deletes the added point.

[Redo] Redo: Displays the square at the previous position.

7) Press the Accept pattern area [Accept pattern area] button.

The stimuli projection area is defined. The stimuli projection points are displayed in the area.



8) Increase or decrease the total number of the stimuli to the desired number.

- button: Decrease the total number of stimuli to be projected.
+ button: Increase the total number of stimuli to be projected.

9) Select the initial luminance by pressing the sensitivity scale.

When the desired luminance is not displayed, press ◀ or ▶ (*E) to move the scale.

The selected luminance is outlined in blue(*F).

10) Inform the patient that the test will start, and instruct them to press the response button when they see a stimulus.

11) Press the Accept density [Accept density] button.

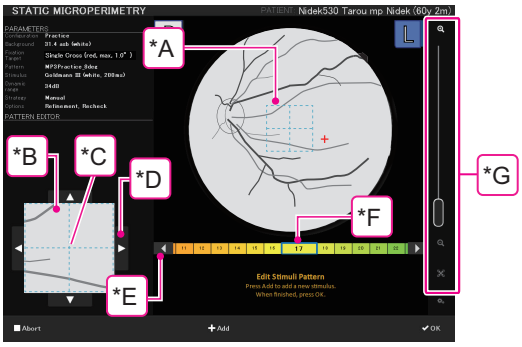
The stimuli are projected on the fundus, and the test starts. *(Step 6)* *(page 71)*

- Manual

Specify the stimuli for performing test.

1) Perform *(Step 1)* to *(Step 3)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

The area outlined in the dotted squares on the fundus image is enlarged and displayed in the lower left of the screen.



Note

- The zoom on the enlarged screen can be changed with the parameter setting.
  High precision pointing view zoom factor: 1x / 2x / 4x----------2x is the default.
  "4.5.3 Application setting" (page 136)

The message below is displayed in the message field.

Edit Stimuli Pattern Press Add to add a new stimulus. When finished, press OK.

2) To adjust the position precisely, enlarge the image with the magnification slider (*G) *(page 42)*.The image on the enlarged screen is also magnified along with the fundus image.

3) Drag the square(*A) on the fundus image or enlarged screen(*B) so that the center of the square(*C) is aligned with the position to be tested.

Note

- Dragging outside of the square moves the entire fundus image.

4) Finely adjust the position by pressing ◀, ▶, ▲, or ▼ (*D).

5) Select the stimuli luminance by pressing the sensitivity scale.

When the desired luminance is not displayed, press ◀ or ▶ (*E) to move the scale.

The selected luminance is outlined in blue(*F).

6) Press the Add +Add button.

The added or recheck stimulus is displayed as a point to be projected (in pink) in the center of the square.

7) Repeat *(Step 3))* to *(Step 6))* as many times as necessary for the desired number of points.

8) Inform the patient that the test will start, and instruct them to press the response button when they see a stimulus.

9) Press the OK ✔Ok button.

The stimuli are projected on the fundus, and the test starts. *(Step 6) (page 71)*

- Peri-papillary

The periphery of the optic disc can be tested by specifying the optic disc outline.

The stimuli are arranged radially around the optic disc at 30° intervals for a total of 12 directions including horizontal direction. For the settings of the distance from the optic disc outline and the intervals between stimuli, see *" Examination" (page 126)* of *"O Microperimetry test settings"*.

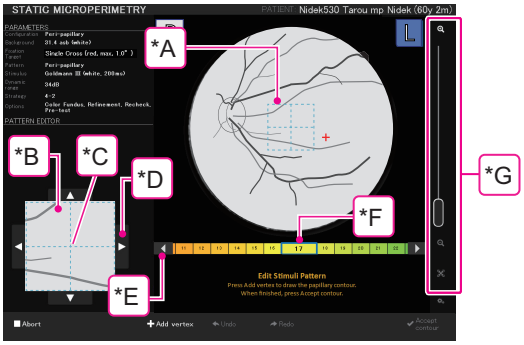
Note

- "Distance" means the angle of view as projected from the device.

1) Perform *(Step 1)* to *(Step 3)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

The stimuli projection setting screen is displayed.

The area outlined in the dotted squares on the fundus image is enlarged and displayed in the lower left of the screen.



Note

- The zoom on the enlarged screen can be changed with the parameter setting.
  High precision pointing view zoom factor: 1x / 2x / 4x----------2x is the default.
  "4.5.3 Application setting" (page 136)

The message below is displayed in the message field.

Edit Stimuli Pattern
Press Add vertex to draw the papillary contour.
When finished, press Accept contour.

2) To adjust the position precisely, enlarge the image with the magnification slider (*G) *(page 42)*.
   The image on the enlarged screen is also magnified along with the fundus image.

3) Drag the square(*A) on the fundus image or enlarged screen(*B) so that the center of the square(*C) is aligned with the optic disc outline.

Note

- Dragging outside of the square moves the entire fundus image.

4) Finely adjust the position by pressing ◀, ▶, ▲, or ▼ (*D).

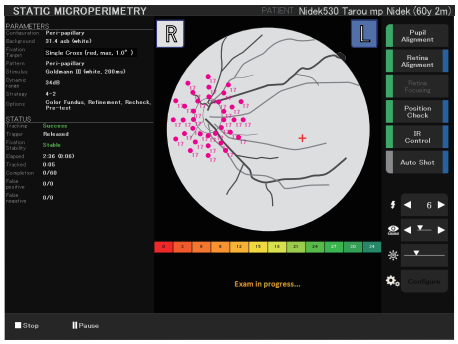
5) Press the Add vertex [+Add vertex] button.

6) Repeat *(Step 3))* to *(Step 5))* to define the optic disc outline.
   To respecify the mark:
   - [Undo] Undo: Deletes the added point.
   - [Redo] Redo: Displays the square at the previous position.

7) Select the initial luminance by pressing the sensitivity scale.
   When the desired luminance is not displayed, press ◀ or ▶ (*E) to move the scale.
   The selected luminance is outlined in blue(*F).

8) Inform the patient that the test will start, and instruct them to press the response button when they see a stimulus.

9) Press the Accept contour [✔Accept contour] button.
   The optic disc outline is determined. Stimuli projection points are displayed around the optic disc, then the stimuli are projected on the fundus to start the test. *(Step 6) (page 71)*



Note

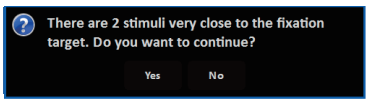
- When a part of stimuli pattern is outside the fundus area, the message below appears in the message field before the test starts.

  ex.) Eleven points of stimuli are outside the fundus area and cannot be projected.

  When the test is continued, the stimuli that cannot be projected are displayed as "×".

- When "Yes+collision check" is selected for the Recheck parameter *(page 126)*, the points overlapped with the fixation target blink. Pressing the OK button displays the following message.

  ex.) Two points are overlapped with the fixation target



  Yes: Continues the test.

  Inform the patient that the test will start, and press the Yes button.

  See *(Step 5)* and *(Step 6)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

  No: Adjusts the stimuli arrangement pattern and fixation target.

  The message window disappears and the message below is displayed in the message field.

  The message differs depending on the stimuli arrangement (Pattern type).

  • Semi-automatic

  The following message appears and the specified stimuli projection area is deleted.

Edit Stimuli Pattern
Press Add vertex to draw the pattern outline. If needed, change the fixation target properties. When finished, press Accept pattern area.

  • Manual

Edit Stimuli Pattern
Press Add to add a new stimulus. If needed, change the fixation target properties. When finished, press OK.

  • Peri-papillary

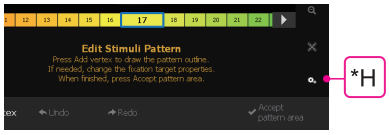
  The following message appears and the specified optic disc outline is deleted.

Edit Stimuli Pattern
Press Add vertex to draw the papillary contour. If needed, change the fixation target properties. When finished, press Accept contour.

  Follow the message and perform adjustment.

  If necessary, change the fixation target shape with the fixation target setting button(*H).

  "14 Fixation target setting button" (page 31)



  After adjustment, press Accept density / OK / Accept contour:

  Inform the patient that the test will start, and press the button.

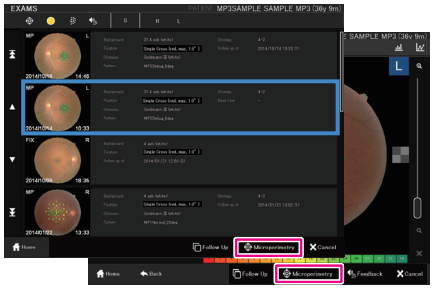
  See *(Step 5)* and *(Step 6)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

O Microperimetry test using color fundus image captured with MP-3

When color fundus images have been captured with the MP-3, the stimuli arrangement pattern can be adjusted based on those captured images to perform microperimetry test.

1 Select data containing the desired color fundus image on the EXAMS screen. Press the Microperimetry button (Microperimetry), or press the Microperimetry button (Microperimetry) on the View screen.

The test configuration list appears.

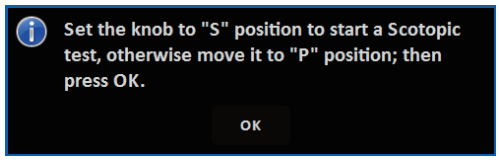


Note

■ For the type S, perform the followings.

1) Press [Microperimetry].

The following message appears.



2) Change the filter knob position as follows.

Microperimetry test: "P"

Scotopic microperimetry test: "S"

3) Press [OK].

When the filter knob is on "P" position, the test configuration list appears for the microperimetry test.

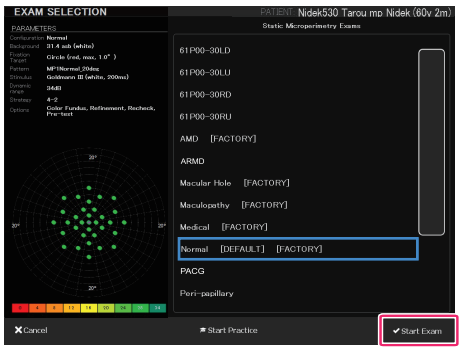
When the filter knob is on "S" position, the test configuration list appears for the scotopic microperimetry test.

4) When the filter knob is on "P" position, start from Step 2.

When the filter knob is on "S" position, see *"O Scotopic microperimetry test with color fundus image captured with MP-3" (page 110)*.

2 Select the desired test configuration and press the Start Exam (✔Start Exam) button.

The main body moves to the eye from which the color fundus image was captured, and the STATIC MICROPERIMETRY screen appears.



3 Perform *(Step 3)* to *(Step 6)* in *"3.3 Basic Test Procedure" (page 52)*.

4 Press the OK ✔Ok button.

Capture a reference image for tracking the fundus (IR fundus image).

Automatic selection of Tracking Reference Image in progress...

↓

↓

↓

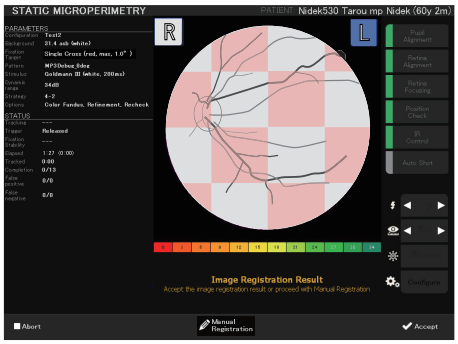
↓

Image Registration Result
Accept the image registration result or proceed with Manual Registration.

After the image acquisition, the acquired image and the reference image for tracking of the past data are overlaid and displayed in an alternately checkered pattern like a chessboard.

Black and white: Acquired reference image for tracking

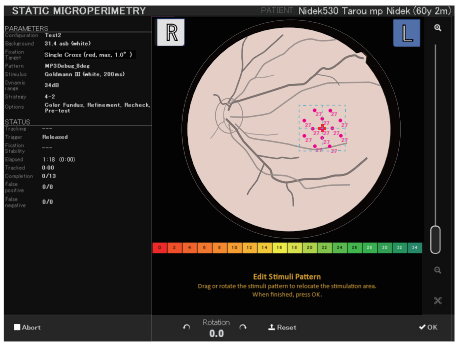
Color: Reference color fundus image



Reference image check screen

5 Confirm that the overlaid images are properly aligned by observing the alignment of marks such as blood vessels.

6 After checking the alignment, proceed to the next step with the following buttons.



Screen when [Accept] is selected

- Accept: Alignment is proper.

  Stimuli arrangement pattern is displayed on the overlaid images.

  Proceed to *(Step 7)*.

- Manual Registration: Alignment needs to be corrected.

  The manual registration screen appears.

  "O Manual registration" (page 78)

7 Set the stimuli arrangement pattern position in the same manner as *(Step 4) (page 69)* of *"3.5.4 LAN connection: Microperimetry test"*.

8 Inform the patient that the test will start. Instruct them to press the response button when they see a stimulus.

9 Perform microperimetry test in the same manner as *(Step 6) (page 71)* to *(Step 9) (page 75)* of *"3.5.4 LAN connection: Microperimetry test"*.

10 The test result can be observed in details on the View screen.

"2.2.6 View screen" (page 35)

Note

- The View screen display differs depending on whether color fundus images are additionally captured or not during the test.

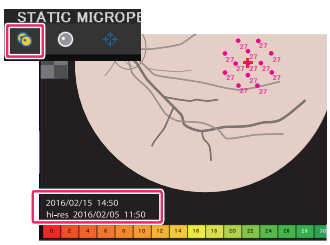
  No additional images are captured:

  The reference color fundus image (Planning image) is overlaid with test results. In this case, the following indication appears on the View screen. Performing the same test (microperimetry test using color fundus image) using this test result is not possible.

  ex.) 2016/02/15 14:50 --- Tested date and time

  hi-res 2016/02/05 11:50 --- Date and time when the reference color fundus image was captured.

  : Turns on and off the Planning image display. When the Planning image is displayed, the background turns black.



  Additional images are captured:

  Although the reference color fundus image (Planning image) is added to the test result, button, Planning image, and test information (hi-res 2016/02/05 11:50) are not displayed on the MP-3. They are displayed on the connected computer.

11 Press [Home] (Home) button.

The HOME screen appears.

3.5.5 Microperimetry test practice mode: PRACTICE

The microperimetry test is performed by the patient focusing at the fixation target and pressing the response button when they see a stimulus.

This is a function to practice the operation of the response button.

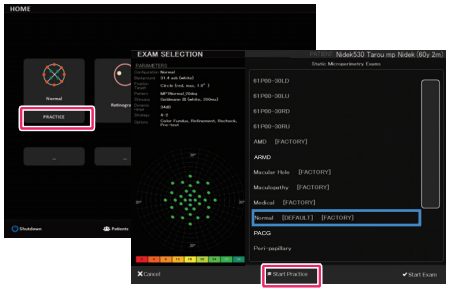
There are Automatic mode in which nine stimuli (stimuli luminance: 0 dB) are projected, and Manual mode in which the operator specifies the number of stimuli, position, and luminance.

"4.5.3 Application setting" (page 136)

○ Automatic

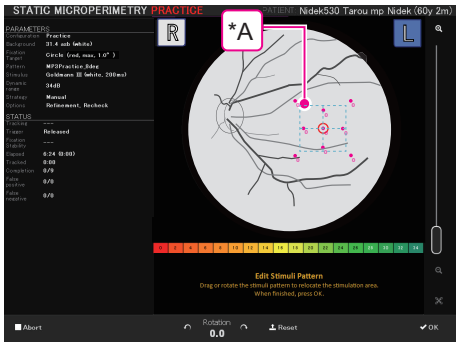
1 Press the Practice PRACTICE or the Start Practice Start Practice button.

The screen changes to the practice screen (STATIC MICROPERIMETRY PRACTICE).



2 Perform *(Step 2)* and *(Step 3)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

The stimuli projection setting screen is displayed.



3 Drag the square(*A) on the fundus image to the desired position to practice the stimuli arrangement pattern.

Note

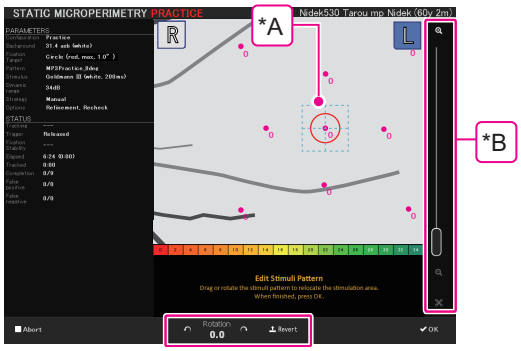
- Pressing the OK button when a part of stimuli pattern is outside the fundus area displays the following message in the message field.

  ex.) Eleven points of stimuli are outside the fundus area and cannot be projected.

  When the test is continued, the stimuli that cannot be projected are displayed as " × ".

- Dragging outside of the square moves the entire fundus image.

- Fine adjustment of stimuli arrangement pattern position

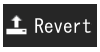


1) Enlarge the fundus image using the magnification slider(*B). *(page 42)*

2) Finely adjust the position by dragging the square(*A).

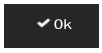
- Rotating stimuli arrangement pattern

1) Use  or  button to rotate the stimuli arrangement pattern.

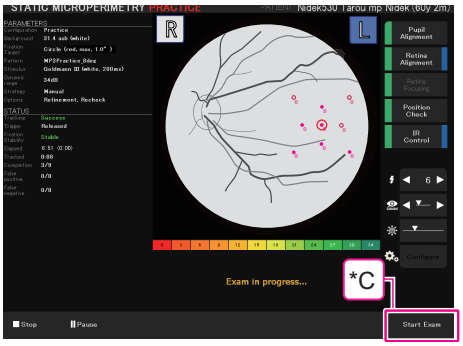
	Pressing this button rotates the pattern counterclockwise by 0.1°.
	Pressing this button rotates the pattern clockwise by 0.1°.
	Pressing the button resets the rotation (0.0°) and pattern position.
	Indicates the rotation degree: 0.0 to 359.9° (counterclockwise)

Rotation information is added to “Pattern” on the left side of the screen.
“3 Test information display area” (page 40)

4 Inform the patient that the test will start. Instruct them to press the response button when they see a stimulus.

5 Press the OK  button.

The practice starts.



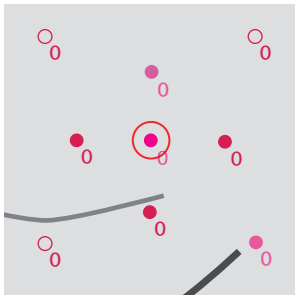
Note

- To cancel the practice to proceed to the test, press the Start Exam button(*C) in the lower right corner of the screen.

  When practice was started with the Practice  button: Performs test with the default test configuration.

  When practice was started with the Start Practice  button: Performs test with the selected test configuration.

The stimuli are projected at the luminance of 0 dB. The luminance does not change.



Pink: Points not yet projected. The number indicates the luminance.

Other than pink: Practice finished

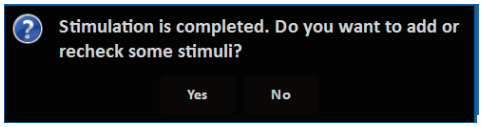
0 : Patient pressed the response button.

0 : Patient did not press the response button.

× : Stimuli are outside the fundus area and cannot be projected.

The point being projected is blinking.

When the practice finishes, the confirmation dialog box asking whether or not to perform additional practice appears.



6 When additional practice is necessary, press the Yes button. To finish the practice, press the No button.

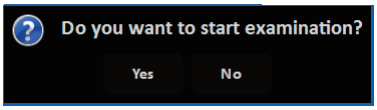
Yes: The additional practice screen appears. Add some stimuli for the practice.

"O Additional test" (page 76)

The luminance of the stimuli can be changed.

When the additional practice finishes, the confirmation dialog box asking whether to perform another additional practice appears.

No: The confirmation dialog box for starting the test appears.



7 Press the Yes button to start the test. To finish the practice, press the No button.

Yes: Microperimetry test starts.

When practice was started with the Practice PRACTICE button: Performs test with the default test configuration.

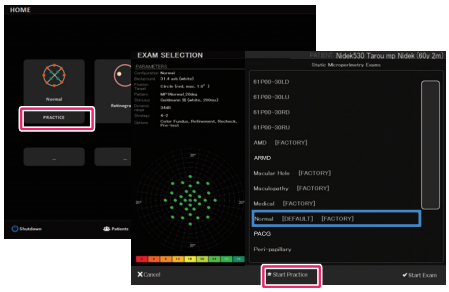
When practice was started with the Start Practice Start Practice button: Performs test with the selected test configuration.

No: Finishes the practice and returns to the HOME screen.

○ Manual

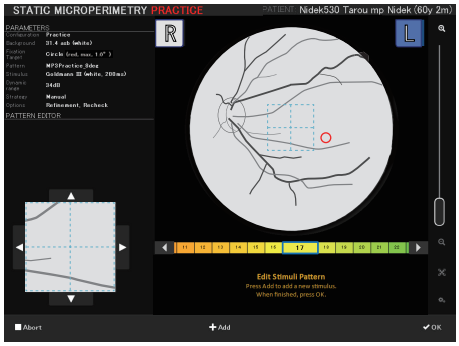
1 Press the Practice PRACTICE or the Start Practice Start Practice button.

The screen changes to the practice screen (STATIC MICROPERIMETRY PRACTICE).



2 Perform *(Step 2)* and *(Step 3)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

The stimuli projection setting screen is displayed.



3 Specify the stimuli in the same manner as *"O Additional test" (page 76)*.

4 Inform the patient that the test will start, and instruct them to press the response button when they see a stimulus.

5 Press the OK Ok button.

The test starts.

The stimuli are projected with the specified luminance. The luminance is not changed.

Pink: Points to be projected. The number indicates the luminance.
Other than pink: Test finished 14 : Patient pressed the response button. (The color corresponds to the color of the sensitivity scale.) 0 : Patient did not press the response button. × : Stimuli are outside the fundus area and cannot be projected.
The point being projected is blinking.

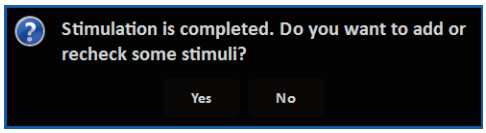
Note

- To cancel the practice to proceed to the test, press the Start Exam button Start Exam in the lower right corner of the screen to proceed to the test.

  When practice was started with the Practice PRACTICE button: Performs test with the default test configuration.

  When practice was started with the Start Practice Start Practice button: Performs test with the selected test configuration.

When the practice finishes, the confirmation dialog box asking whether or not to perform additional practice appears.



6 When additional practice is necessary, press the Yes button. To finish the practice, press the No button.

Yes: The additional practice screen appears. Add some stimuli for the practice.

"O Additional test" (page 76)

The luminance of the stimuli can be changed.

When the additional practice finishes, the confirmation dialog box asking whether to perform another additional practice appears.

No: The confirmation dialog box for starting the test appears.

7 Press the Yes button to start the test. To finish the practice, press the No button.

Yes: Microperimetry test starts.

When practice was started with the Practice PRACTICE button: Performs test with the default test configuration.

When practice was started with the Start Practice Start Practice button: Performs test with the selected test configuration.

No: Finishes the practice and returns to the HOME screen.

3.5.6 LAN connection: Retinography

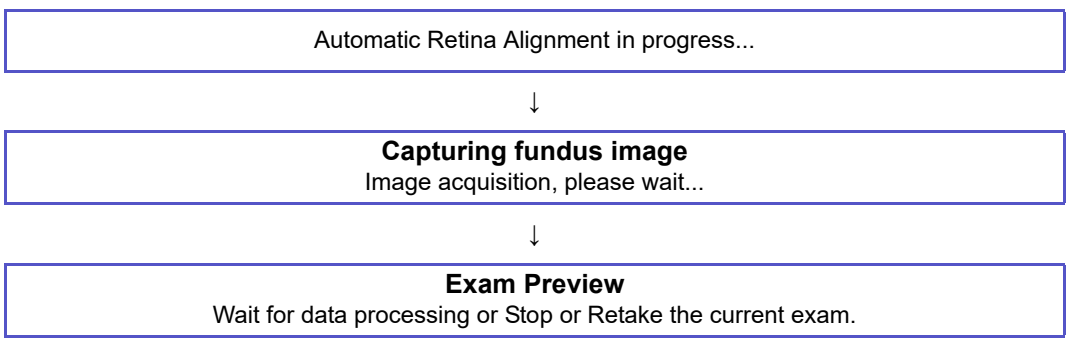
1 Select "RETINOGRAPHY".

Select a test configuration in the same manner as *"3.5.4 LAN connection: Microperimetry test" (page 67) (Step 1)*.

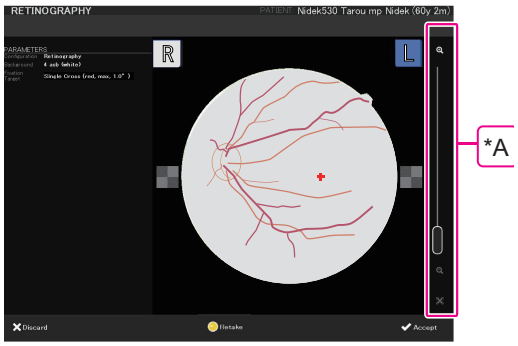
2 Perform *(Step 2)* to *(Step 6)* in *"3.3 Basic Test Procedure" (page 52)*.

3 Press the OK Ok button.

Perform the auto alignment to the fundus again and capture color fundus image with the auto shot function.



After the steps above are complete, the test result confirmation screen appears.



Test result confirmation screen

4 To check the captured image, change the displayed position by dragging the image or use the magnification slider(*A) to enlarge the image.

Note

- When the color fundus image cannot be captured satisfactorily, see *" The home screen is displayed." (page 98)*.

5 Press the corresponding button.

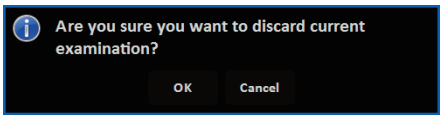
Accept: Saves the test results and displays the View screen.

The auto tracking is canceled and the main unit and measuring unit return to their reference positions.

↓

Proceed to *(Step 6)*.

Discard: Discards the test result. The discard confirmation dialog box is displayed.



↓

OK: Discards the captured image and displays the HOME screen.

Cancel: Displays the test result confirmation screen.

6 Check the test result in detail on the View screen.

"2.2.6 View screen" (page 35)

7 Press the Home button.

The HOME screen appears.

3.5.7 LAN connection: Fixation test

1 Select the [FIXATION].

Select a test configuration in the same manner as *"3.5.4 LAN connection: Microperimetry test" (page 67)*. *(Step 1)*

2 Perform *(Step 2)* to *(Step 6)* in *"3.3 Basic Test Procedure" (page 52)*.

3 Press the [OK] (Ok) button.

Perform the following steps and start the fixation test.

Step	Message field	
Retina Alignment	Automatic Retina Alignment in progress...	Auto alignment to the fundus
↓		
–	Automatic selection of Tracking Reference Image in progress...	Acquiring reference image for fundus tracking
↓		
–	Coordinate system calibration in progress...	Coordinate calibration*2 A beep sounds. Instruct the patient to focus on the fixation target.
↓		
–	Exam in progress...	Starting the fixation test
↓		
–	Automatic Alignment Keeping in progress...*1	Executing the fixation test
↓		
–	Exam in progress...	

*1: Indicates that Position Check is being performed. This procedure is not performed in manual mode.

*2: If the patients eyes are not fixed, the message shown below appears. In such a case, see *"● When the patient's eye movement is unstable" (page 68)* and take proper measures.

Select the reference image for auto tracking then press OK. Press Retake when retaking the image.

- Finishing the test

When the specified test duration expires, the test is complete.

When the "Optional Color Fundus Image" parameter is set to Yes, proceed to color fundus image capture.

When the parameter is set to No, finish the test and proceed to *(Step 5)*.

For the "Optional Color Fundus Image" setting, see *"O Fixation" (page 129)*.

The following is the procedure to capture color fundus images with the "Optional Color Fundus Image" parameter set to Yes.

When color fundus image capture is automatically performed (*"10 Auto function buttons" (page 30)*):

Exam in progress...

↓

Automatic Retina Alignment in progress...

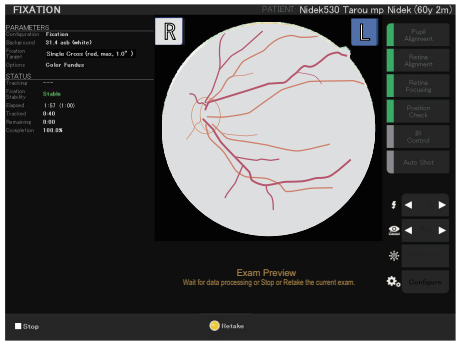
↓

Capturing fundus image
Image acquisition, please wait...

↓

Exam Preview
Wait for data processing or Stop or Retake the current exam.

The retinography preview screen (simple display) is displayed.



Retinography preview screen (simple display)

• When color fundus image capture is manually performed

Press the release button by following the message below.

Grab the fundus image
Press the joystick button to take a picture.

- To pause or resume the test

  See *"● To pause or resume the test" (page 71)* in *"3.5.4 LAN connection: Microperimetry test" (Step 6)*.

- To cancel the test

  See *"● To cancel the test" (page 72)* in *"3.5.4 LAN connection: Microperimetry test" (Step 6)*.

- Procedure for when the position of the eye is largely shifted during the test

  See *"● Procedure for when the position of the eye is largely shifted during the test" (page 72)* in *"3.5.4 LAN connection: Microperimetry test" (Step 6)*.

4 Perform *(Step 7)* to *(Step 9)* in *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

For manual registration, see *"O Manual registration" (page 78)*.

5 Check the test result in detail on the View screen.

"2.2.6 View screen" (page 35)

6 Press the Home [Home] button.

The HOME screen appears.

3.5.8 LAN connection: Feedback exam.

The operator can perform the LAN connection either from the home screen or with the past data of microperimetry test.

A USB speaker is necessary for the test. Prepare it beforehand and connect it to the USB connector.

Note that the USB speaker is not included in the packed contents. The operator needs to prepare it by themselves. The USB speaker to be used should satisfy the specifications below.

- USB power supply（USB bus powered）
- Corresponding to WindowsXP and Windows10

  For purchasing, consult with NIDEK or your distributor.

○ When performing Feedback exam. from the home screen

1 Press [FEEDBACK].

Select the test configuration with the same procedure as *"3.5.4 LAN connection: Microperimetry test" (Step 1) (page 67)*.

2 Operate the system referring to the procedure described in *"3.3 Basic Test Procedure" (Step 2) (page 52)* to *(Step 4) (page 69)*.

3 Making sure that the patient can recognize the fixation target, determine the fixation shape and position to be displayed on the fundus observation screen.

For the details, see *"3.3 Basic Test Procedure" (Step 5) (page 50)* to *(Step 6)*.

The position where the patient fixes their visual line on the fixation target indicates the PRL（Preferred Retinal Locus）for "Feedback exam." process.

4 Press the [OK] (Ok) button.

Capture the guide image (IR fundus image) for the fundus tracking.

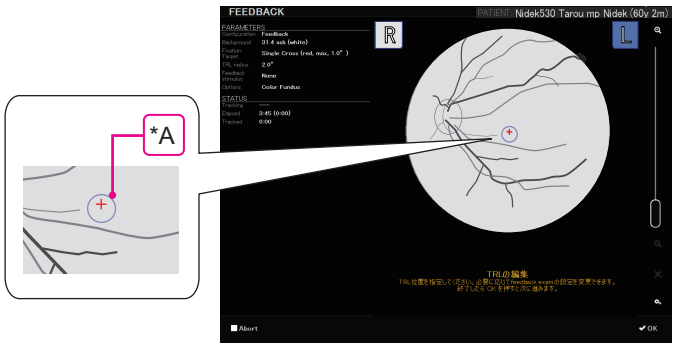
Automatic selection of Tracking Reference Image in progress...

↓

↓

↓

Edit Trl Drag the Trl over the desired location; if desired, change the feedback exam properties. When finished, press OK.



5 Drag the TRL (*A) (Trained Retinal Locus) indicated with a purple circle to the desired position.

6 Set the TRL size and Feedback stimulus as necessary.

1) Press Setting (⚙) (*B).

The information of TRL and feedback stimulus are displayed in the lower part of the screen.

2) Change the settings.

[Trl radius] [Feedback stimulus] Set the followings for Checkerboard [Side] [Squre side] [Frequency]	Press ▼ to select the desired item from the pull-down menu. *"O Feedback exam." (page 130)*
✔ Done [Done](*C)	Pressing this icon completes the setting and the information disappears.

7 Press [OK](*D) button.

■ When the Feedback stimulus is set to “None” :

Execute the Feedback exam.

When the patient fixes their visual line to the fixation target near the TRL by referring to the interval of Feedback sound, the sound interval becomes shorter as the fixation target approaches the TRL.

- Setting the Feedback sound（Feedback continuous sound）: *“4.5.3 Application setting” (page 136)*

When “Beep” is set：Beep sound is heard continuously.

When “Music” is set: The setting music sound is heard.

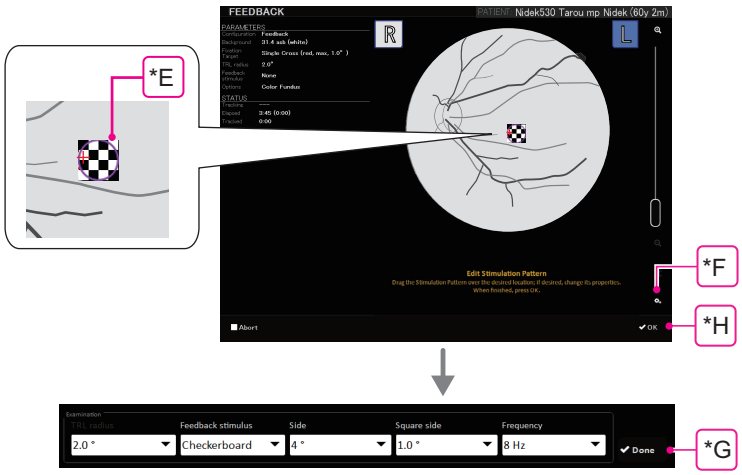
■ When the Feedback stimulus is set to “Checkerboard(*E)” :

The following message appears in the message field.

Edit Stimulation Pattern
Drag the Stimulation Pattern over the desired location; if desired, change the properties.
When finished, press OK.

Set the Feedback stimulus again as necessary.

1) Press the Setting (⚙) (*F) icon.
The Feedback stimulus information is displayed.



2) Change the setting.

[Feedback stimulus] [Side] [Squre side] [Frequency]	Press ▼ to select the desired item from the pull-down menu. *“O Feedback exam.” (page 130)*
✔Done [Done](*G)	Pressing this icon completes the setting and the information disappears.

3) Press [OK](*H).
Feedback exam. is executed.

When the patient fixes their visual line to the fixation target near the TRL by referring to the interval of Feedback sound, the sound interval becomes shorter as the fixation target approaches the TRL

When the fixation target is in the TRL on the test screen, the feedback stimulus is displayed on the test screen and projected on the fundus.

When the feedback stimulus is set to be displayed at the same position as the TRL, the patient also can see the TRL position.

(Their positions can be set differently.)

Note

- During the exam, while Feedback stimulus is turned on, it shall be displayed in different retinal positions randomly, as the patient's fixation moves within the TRL area.

● When pausing/restarting the test

1) Press [Pause](⏸Pause).
Feedback exam.is stopped.

The following message appears in the message field.

Exam is in pause state. To restart, press Resume.

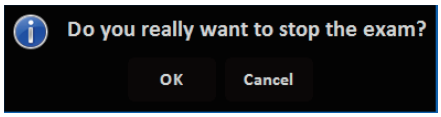
2) Press [Resume](▶Resume).

Feedback exam. is restarted.

8 Press [Stop] (■Stop).

Feedback exam. stops.

The confirmation window appears.



9 Press [OK].

Feedback exam. finishes and the test result screen is displayed.

Note

- When the color fundus image capture cooperate function is enabled, [Take] (Take) icon appears in the lower part of the screen. Pressing this icon captures the color fundus image.
- Pressing [Cancel] in the confirmation window restarts the Feedback exam.
  Before pressing this icon and restarting the exam, notify the patient that the exam will start again.

10 When the color fundus image has been captured, perform the procedure referring to *"3.5.4 LAN connection: Microperimetry test" (Step 7) (page 74)* to *(Step 9) (page 75)*.

11 Press [Accept](✔Accept).

12 Confirm the test result on the View screen.

"2.2.6 View screen" (page 35)

13 Press [Home] (Home).

The home screen is displayed.

○ When executing Feedback exam. with past microperimetry test data

1 On the Exam screen, select any past Microperimetry test data.

2 Press [View] (View).

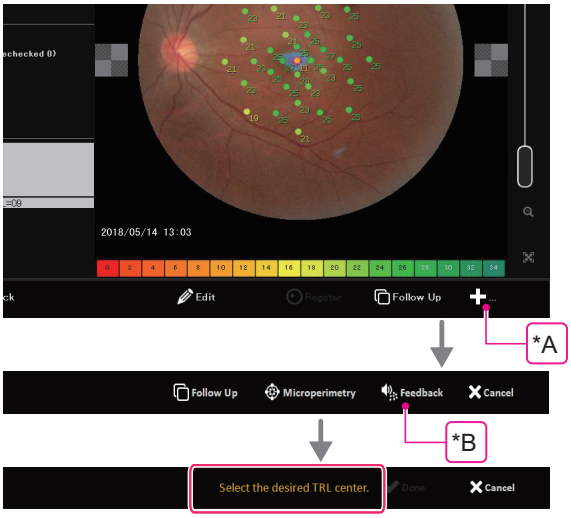
The View screen of each data is displayed.

3 Press [+] ( ) (*A)button.

4 Press [Feedback](*B).

The following message appears in the lower part of the screen:

“Select the desired TRL center.”

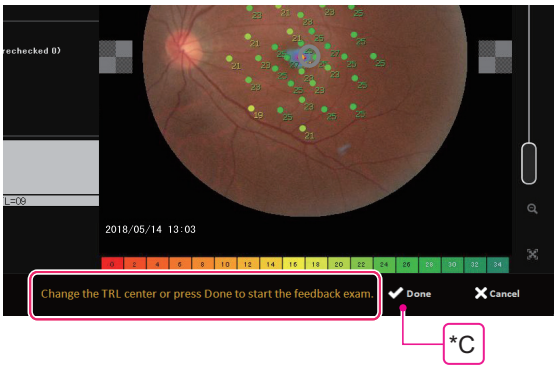


5 Press the area to be examined on the screen.

The TRL appears at the touched position and the following message appears:

“Change the TRL center or press Done to start the Feedback exam.”

6 To change the TRL position, press the other position.



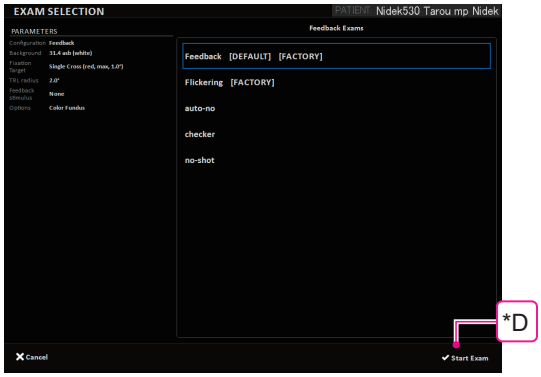
7 After determining the TRL position, press [Done](*C).

The test configuration list for Feedback exam. appears.

8 Select the configuration and press [Start Exam](*D).

The test screen is displayed.

9 Perform the procedures referring to the descriptions in *“3.3 Basic Test Procedure” (Step 3) (page 52)* to *(Step 4) (page 53)*.



10 Making sure that the patient can see the fixation target, set the fundus size and position to be displayed on the fundus observation screen.

For the details, see *“3.3 Basic Test Procedure” (Step 5) (page 50)* and *(Step 6)*.

The position where the patient sees the fixation target indicates the PRL (Preferred Retinal Locus) for Feedback exam.

11 Press the [OK] (Ok) button.

Acquire the tracking reference image (IR fundus image).

Automatic selection of racking Reference Image in progress...

↓

↓

↓

Image Registration Result

Accept the image registration result or proceed with Manual Registration.

After the reference image is acquired, the acquired image and the reference image for tracking of the past data are overlaid and displayed in an alternately checkered pattern like a chessboard.

■ (Black and white): Source tracking reference image

Tracking reference image of the past exam data

■ (Purple): Tracking reference image

Acquired tracking reference image

Feedback exam.reference image confirmation screen

12 Check for position misalignment referring to distinctive points such as blood vessels on the overlaid images.

13 Perform the procedures referring to *"3.5.4 LAN connection: Microperimetry test" (Step 9) (page 75)*.

- Accept : when the position is aligned properly

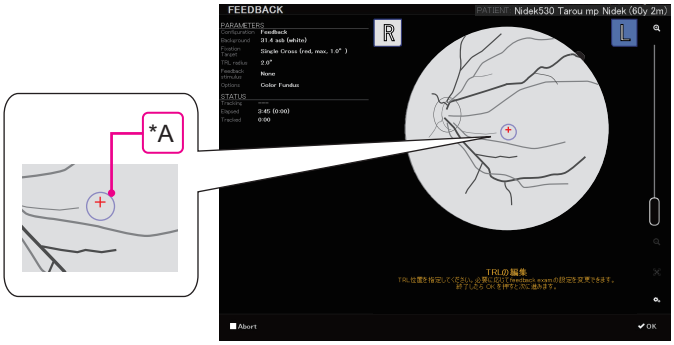
  The test is enabled with the same fixation position as the past data.

  Perform the Step 14.

- Manual Registration : When correcting the misalignment

  The manual registration screen is displayed.

  "O Manual registration" (page 78)



14 As necessary, drag the TRL to the desired position.

15 Perform the procedures referring to *"O When performing Feedback exam. from the home screen" (Step 6) (page 96)* to *(Step 11) (page 98)*.

Note

- When the TRL or Feedback stimulus is to be dragged, icon may appear and it cannot be moved. In such a case, the acquired tracking data may be defective. Retry from the Step 1.
- While the fixation charts used in the past examination are also displayed on the exam screen, the patient sees only the fixation chart that has been set in the Feedback.exam.

16 Check the test result in detail on the View screen.

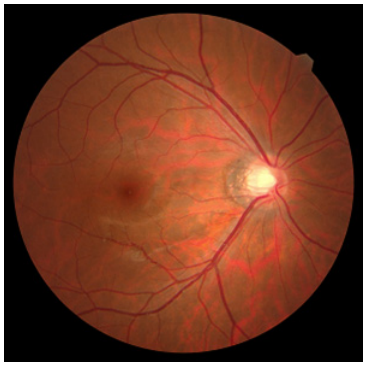
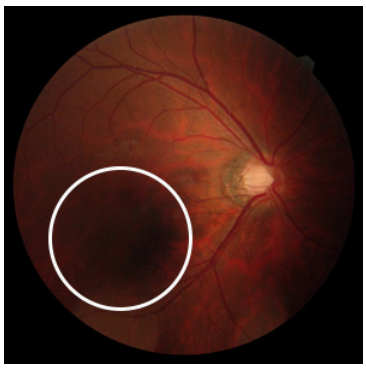
"2.2.6 View screen" (page 35)

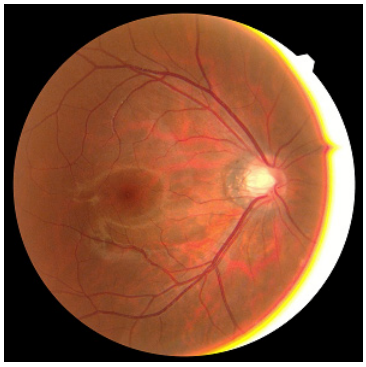
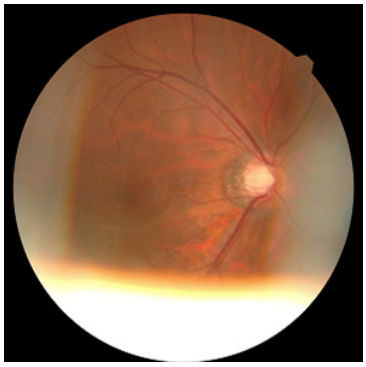
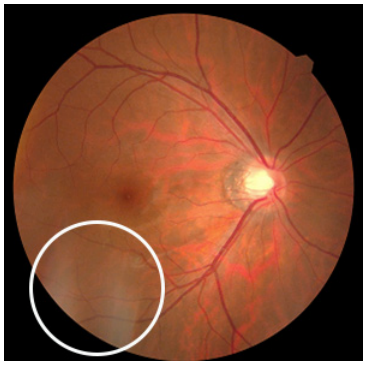
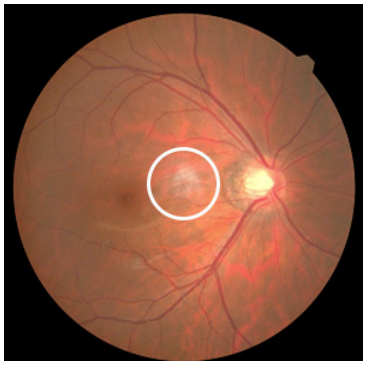
17 Press Home.

The home screen is displayed.

3.5.9 If no satisfactory color fundus image can be captured

According to the alignment between the main body and the patient's eyes, a black shadow may be projected on the color fundus image. Use the table below to improve image capture quality.

Symptom	Cause and Remedy
Satisfactory image	
Near the center of the image is dark	• The patient's pupil may not be dilated enough. Improve the patient's pupil dilation. If the pupil is difficult to dilate, increase the flash intensity for image capture. 

Symptom	Cause and Remedy	
White reflection on the image periphery	• The main unit may be shifted from the patient's eye. Occurred on the upper part: move the main unit upward Occurred on the lower part: move the main unit downward Occurred on the right part: move the main unit rightward Occurred on the left part: move the main unit leftward	
White reflection on the lower part of the image	• The patient's eyelid may be closing. Instruct the patient to open their eye wide. If the patient cannot open their eye sufficiently, lift the eyelid taking care not to press against the eyeball. • The image may have been captured at the moment of blinking. Ask the patient to refrain from blinking and conduct capture as quickly as possible.	
A circular or linear faded white shape appears in the image.	• The patient's eyelashes may be obscuring the required pupil diameter mark. Instruct the patient to open their eye wide. If the patient cannot open their eye sufficiently, lift the eyelid taking care not to press against the eyeball. • The patient's tear may be shedding too much. Capture the image after wiping the patient's tear.	
The center of the image is white. The image becomes white overall.	• The objective lens may be smudged. *"4.6.1 Cleaning the objective lens" (page 140)*	

3.6 FollowUp Test

The FollowUp test can be performed under the same conditions as the past test.

The FollowUp test is available for the microperimetry test, fixation test, and Feedback exam.

The FollowUp test is not available for the fundus image capture.

1 Select the desired past test data on the EXAMS screen to perform FollowUp.

2 To check the past test data, press the View [View] button to display the results on the View screen. Check the test data.

If the checking is not necessary, perform *(Step 3)* on the EXAMS screen.

3 Press the FollowUp [Follow Up] button.

The main body moves to the eye from which the past data was obtained, and the same EXAMS screen as the past test is displayed.

4 For the microperimetry test, instruct the patient to hold the response button.

5 Perform *(Step 3)* in *"3.3 Basic Test Procedure" (page 52)*.

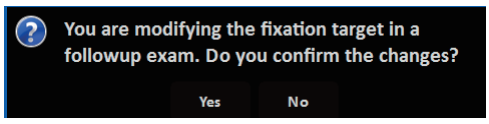
6 Press the OK [Ok] button.

Perform alignment. When fundus image is displayed, the following message appears in the message filed.

Edit Fixation Target
Change the fixation target properties.
When finished, press OK

7 If necessary, change the fixation target shape. *"14 Fixation target setting button" (page 31)*

When the fixation target shape has been changed, the confirmation dialog box appears.



8 Press the OK [Ok] button.

Start alignment and capture a reference image for tracking the fundus (IR fundus image).

Automatic selection of Tracking Reference Image in progress...

↓
↓
↓
↓

Image Registration Result
Accept the image registration result or proceed with Manual Registration

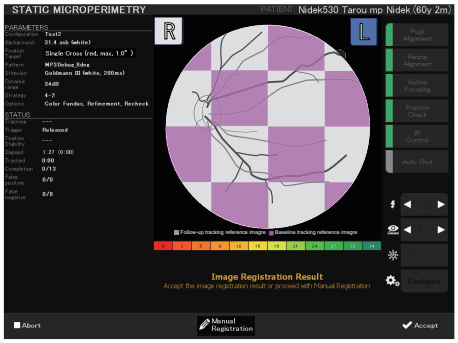
After the reference image is acquired, the acquired image and the reference image for tracking of the past data are overlaid and displayed in an alternately checkered pattern like a chessboard.

■ (Black and white): Follow-up tracking reference image

Acquired reference image for tracking

■ (Purple): Baseline tracking reference image

Reference image for tracking of the past data



FollowUp reference image check screen
(Example: Microperimetry test)

9 Confirm that the overlaid images (reference images for tracking) are properly aligned by observing the alignment of marks such as blood vessels.

10 Perform the procedures referring to *(Step 9)* of *"3.5.4 LAN connection: Microperimetry test" (page 67)*.

For the Feedback exam data, perform the procedure referring to *"O When executing Feedback exam. with past microperimetry test data" (Step 13) (page 100)* to *(Step 15)*.

- Accept: Accept: Alignment is proper.

Microperimetry test:

Test is performed with the same fixation target positions and the same stimuli pattern as the past test data.

Fixation test and Feedback exam.:

Test is performed with the same fixation target positions as the past test data.

- Manual Registration: Manual Registration: Alignment needs to be corrected.

The manual registration screen appears.

"O Manual registration" (page 78)

11 After the test, check the test result in detail on the View screen.

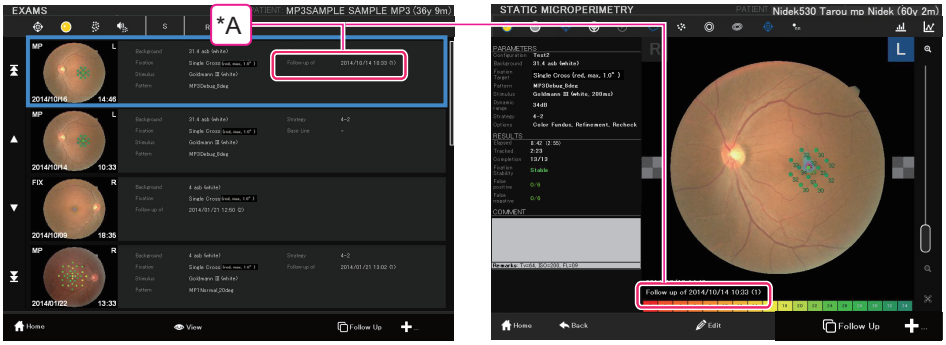
“2.2.6 View screen” (page 35)

The FollowUp label is added to the saved test data.

History(*A): Follow up of 2014 /10/14 10:33 (1)

YYYY/MM/DD Time (Number of times that FollowUp test was performed)

The initial test data on which the FollowUp test was conducted is labeled as “Baseline -”.



When a FollowUp test is performed on FollowUp data, the patient’s initial test data is regarded as the baseline.

ex.) Select the “Follow up of 2014/10/14 10:33 (1)” data and perform a FollowUp test.

↓

The baseline data for “Follow up of 2015/1/4 11:12 (2)” and “Follow up of 2014/10/14 10:33 (1)” is the same.

12 Press the Home Home button.

The HOME screen appears.

3.7 Off-line Registration

The off-line registration enables operator to paste the color fundus image that has been already taken to without fundus image capture or to test data with no color fundus image. This function is available only once for each test data.

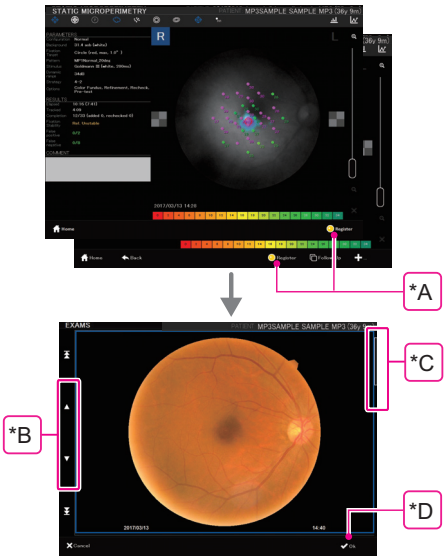
The operator can perform the same things with the data acquired with the data of tests conducted in the scotopic environment.

The exam data that can be pasted are indicated with [Register] (Register) icon under the view screen.

1 Display the data on the view screen to which a color fundus image is to be pasted..

2 Press the [Register] (*A) button.

The list of the color fundus image is displayed.



Note

- Only the color fundus image that has been captured within 120 days before or after the test date are available. Those that have been captured outside this range are not displayed in the list.

3 Select the color fundus image with (▲ , ▼) (*B) icon.

The image also can be selected with the slider (*C).

4 Touch the image on the screen.

5 Press the [OK] (*D) button.

The confirmation window appears for the confirmation of the position of selected color fundus image.

The color fundus image is overlaid and displayed in an alternately checkered pattern like a chessboard.

■ Black and white : Fundus image of test data

■ Color: Color fundus image in selection

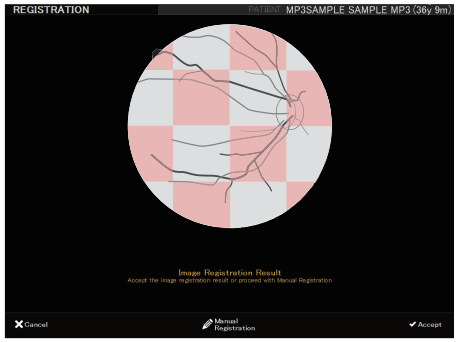


Image position confirmation window

6 Check the misalignment of the overlaid images with the same procedures in *"O Microperimetry test using color fundus image captured with MP-3" (Step 5) (page 85)* and *(Step 6) (page 86)*.

7 Press the Accept button.

The View screen is displayed with the selected color fundus image pasted.

Note

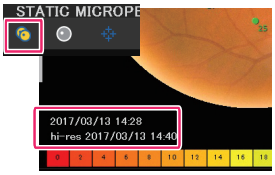
- Pressing [Register] （ Register ） pastes the color fundus image to the exam data. The exam data is displayed on the exam screen and View screen as shown below.

  Display on the View screen：

  Example：2017/03/13 14:28 ---Date and time when the exam data was acquired

  hi-res 2017/03/13 14:40 ---Date and time when the color fundus image was captured

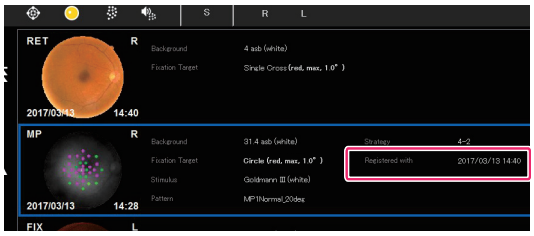
   ：Switches the color fundus image



  Display on the EXAM screen：

  Example：Registered with 2017/03/13 14:40

  ---Date and time when the color fundus image was captured



3.8 Basic Test Procedure (Test in Scotopic Environment)

The following explains the test conducted in the scotopic environment (available in the type S).

Prepare the complete darkened room for the test in advance.

1 Turn the filter knob to “S” position.

The screen changes to that for the test conducted in the scotopic environment.

2 In the case of LAN connection, register or select the patient ID on the home screen (Scotopic).

1) Press [Patients] (Patients).

The patient list screen is displayed.

2) Select the patient from the patient list.

The selectable patients are displayed with the blue frame.

To register a new patient, press (+New). *“3.5.3 Patient registration” (page 63)*

3) Press [Select] (Select).

The home screen (Scotopic) is displayed.

Note

- Pressing the Select Select button may display the message to the right.

The Image List screen of the same patient is opened or the same patient information is edited in NAVIS-EX. Display the Patient List screen in NAVIS-EX.

3 Prepare the patient for the test.

The procedure is the same in *“3.2 Preparation for Test” (Step 5) (page 50)*.

4 On the home screen (Scotopic), select the desired test conducted in the scotopic environment.

Outline of each test

“3.8.1 LAN connection: Scotopic microperimetry test” (page 110)

“3.8.2 Practicing the Scotopic microperimetry test (PRACTICE)” (page 111)

“3.8.3 LAN connection: Scotopic fixation test” (page 112)

5 Perform the procedure referring to *“3.3 Basic Test Procedure” (Step 2) (page 52)* to *(Step 7) (page 54)*.

6 After the test, check the result.

7 Press the [Accept] (Accept) button.

The result is displayed on the View screen.

8 Press the [Home] (Home) button.

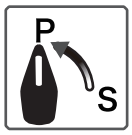
The home (Scotopic) screen is displayed.

9 To test another patient, retry the procedures from *(Step 2)*.

When finishing the test, refer to *"O Finishing the test (Test in Scotopic Environment)"*.

O Finishing the test (Test in Scotopic Environment)

1 Turn the filter knob to the "P" position.



2 Perform the process with the same procedure as *"3.3.2 Shutdown" (page 58)*.

For the LAN connection, finish the process in the same procedure as *"3.5.2 LAN connection: Completion of test" (page 62)*.

3.8.1 LAN connection: Scotopic microperimetry test

The followings should be obeyed in the scotopic microperimetry test.

・Color fundus image capture cannot be performed immediately after the test conducted in the scotopic environment（excluding the case where the color fundus image capture / cooperation function is enabled). Instead, a color fundus image captured beforehand can be pasted.（*"3.7 Off-line Registration" (page 106)*）

1 Select [SCOTOPIC STATIC MICROPERIMETRY].

2 Perform the test with the same procedure as *"3.5.4 LAN connection: Microperimetry test" (Step 1) (page 67)* to *(Step 6) (page 71)*.

The followings are also available:

"O Additional test" (page 76)

"O Stimuli arrangement pattern (Pattern type): Semi-automatic/Manual/Peri-papillary" (page 79)

"O Microperimetry test using color fundus image captured with MP-3" (page 84)

3 After the test, check the test result.

4 Press [Accept] (Accept).

5 Check the test result in detail on the View screen.

"2.2.6 View screen" (page 35)

6 Press [Home] (Home).

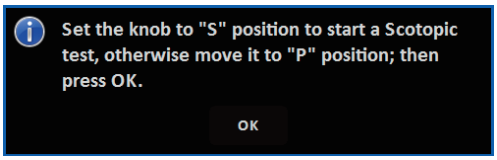
The home screen is displayed.

O Scotopic microperimetry test with color fundus image captured with MP-3

With the images captured with the MP-3, the operator can perform the Scotopic microperimetry test by adjusting the position of stimulus target.

1 Select the data with the color fundus image to be referred to on the EXAM screen. Then, press [Microperimetry] (Microperimetry) or press [Microperimetry] (Microperimetry) on the View screen.

The following message appears.



2 Turn the filter knob to the “S” position.

3 Press the [OK] button.

The configuration list for the scotopic microperimetry test is displayed.

4 Perform the test with the same procedure as *“O Microperimetry test using color fundus image captured with MP-3” (Step 2) (page 85)* to *(Step 11) (page 86)*.

3.8.2 Practicing the Scotopic microperimetry test (PRACTICE)

1 Practice the test with the same procedure as *“3.5.5 Microperimetry test practice mode: PRACTICE” (page 87)*.

3.8.3 LAN connection: Scotopic fixation test

The followings should be obeyed in the Scotopic fixation test.

・Color fundus image capture cannot be performed immediately after the Scotopic fixation test (excluding the case where the color fundus image capture / cooperation function is enabled). Instead, a color fundus image captured beforehand can be pasted. (*"3.7 Off-line Registration" (page 106)*)

1 Select [SCOTOPC FIXATION].

2 Perform the test with the same procedure as *"3.5.7 LAN connection: Fixation test" (Step 1) (page 93)* to *(Step 3)*.

3 After the test, check the test result.

4 Press [Accept] (Accept).

5 Check the test result in detail on the View screen.

"2.2.6 View screen" (page 35)

6 Press [Home] (Home).

The home screen is displayed.

3.8.4 FollowUp test (Test in Scotopic Environment)

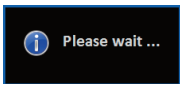
The operator can perform the test with the same conditions as the scotopic microperimetry test and scotopic fixation test in the past.

1 Perform the test in the same procedure as *"3.6 FollowUp Test" (page 103)*.

4 DEVICE SETTINGS AND MAINTENANCE

4.1 Troubleshooting

■ In the event that the device does not work correctly, attempt to correct the problem according to the following table before contacting NIDEK or your authorized distributor.

Symptom	Remedy
The pilot LED does not illuminate even when power to the device is turned on.*1	• The power cord may not be plugged into the power outlet. After checking the power inlet and power cable connection, firmly insert to the power outlet again.
The LCD touch-screen suddenly turns off.	• If the pilot LED is blinking, the device is in Sleep mode. Press any button to restore the device.
The main unit cannot be moved to the right or left. The main unit cannot be moved forward or backward.	• The movement range of the measuring unit is designed to be limited in order to prevent it from contacting the patient's face. Operate the measuring unit again after moving it back to the operator's side.
The measuring unit cannot be operated by the joystick.	• When the selection of the eye to be tested and the chinrest adjustment are not complete, the operation cannot be performed. Be sure to complete those procedures before operating the measuring unit.
The message below appears and the operation stops. 	• In the type S, the operation may stop when the operator changes the filter knob position from "P" to "S" while the message "please wait..." appears on the screen. In such a case, turn the filter knob to "P" position. Doing this closes the message and enables the operation again. *" During use" (page 4)*

*1: Note that the pilot LED blinks when the scotopic environment is enabled with the type S model.

If the symptom cannot be corrected by the above remedies, contact NIDEK or your authorized distributor.

4.2 Error Messages and Remedies

■ If a response button error or test result data sending error appears on the screen, correct the error according to the instructions provided in the Cause and Remedy column.

When any error other than the response button error or test result data sending error occurs, turn off power to the device and contact NIDEK or your authorized distributor.

For details of turning off the power, see *"3.3.2 Shutdown" (page 58)*.

If the error cannot be remedied, notify NIDEK of the error details, symptom, and serial number of your device so that NIDEK can offer appropriate servicing.

○ Response button error

Error related to the response button. If the error occurs, a message to the right appears.

Response button error generation status	Cause and Remedy
At startup	• The response button may not be properly connected or the response button may be broken. • Turn off the device power and firmly reconnect the response button connector to the response button port. • If the same message appears when the device power is turned on again, turn off the device and contact NIDEK or your authorized distributor.
During test	• Patient may be pressing the response button (approximately 45 seconds or more). • Instruct the patient not to press and hold the response button. Whether the response button is "pressed or released" can be checked in the status indication on the left of the test screen. *"3 Status" (page 27)* Trigger Released: white Pressed: green When "Released" is confirmed, the test can now be proceeded. (Touching the message deletes the indication.) • When a status of pressing and holding the response button continues, the device malfunction is possible. Turn off power to the device and contact NIDEK or your authorized distributor.

Note

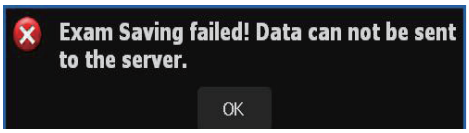
• Even if the response button error occurs, the fundus photography "RETINOGRAPHY" and fixation test "FIXATION" can be performed. To perform the test, touch the message and delete the display beforehand.

○ Test result data sending error

If the test result data fails to be sent to NAVIS-EX (after pressing the Accept button on the test result screen), follow the instructions below.

If the same error message appears repeatedly after conducting the following procedures, turn off the device and contact NIDEK or your authorized distributor.

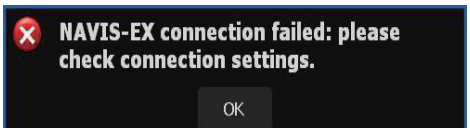
If the error occurs, a message to the right appears.



1 Press the OK button.

The message changes.

Depending on where the communication error occurs, it is possible that no message is displayed. In this case, return to the HOME screen and proceed to Step 3.



2 Press the OK button.

The HOME screen is displayed.

3 Press the Settings Settings button.

The System2/4 screen is displayed.

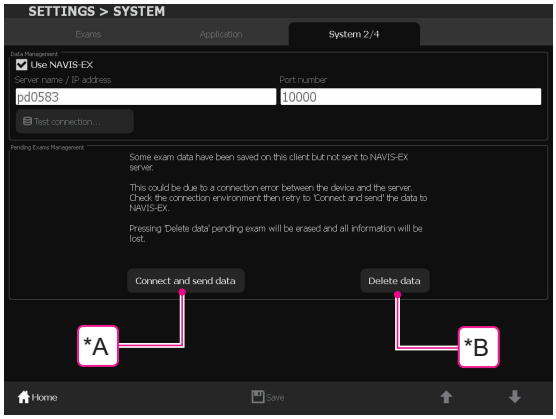
Pending Exams Management field

Some test data have been saved on this client but not sent to NAVIS-EX sever.

This could be due to a connection error between the device and the server.

To check and save the connection settings, press the Connect and send data button.

Pressing 'Delete data' pending test will be erased and all information will be lost.



4 In accordance with the message, perform the following operation.

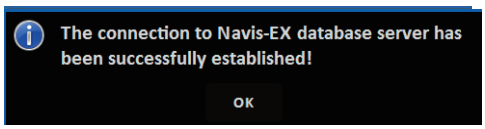
- To send the test result data again

1) Check the LAN cable connection between the device and the PC.

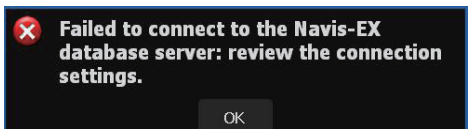
2) Press the Connect and send data Connect and send data (*A) button.

Connection to NAVIS-EX is successful:

Proceed to Step 3).



Failed to connect to NAVIS-EX:



If the connection to NAVIS-EX fails repeatedly, press the OK button and then the Home [Home] button. Then return to the HOME screen and turn off power to the device and contact NIDEK or your authorized distributor.

3) Press the OK button.

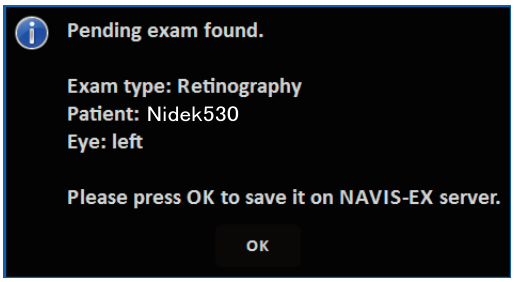
The confirmation message of the test results to be sent is displayed.

<Test result data information>

Exam type

Patient

Eye: left/right



4) Press the OK button.

The test results have been sent if the Pending Exams Management field is no longer displayed on the System2/4 screen.

Note

- If data fails to be sent to NAVIS-EX, restart the PC running NAVIS-EX and return to step 3) above to perform the operation again.

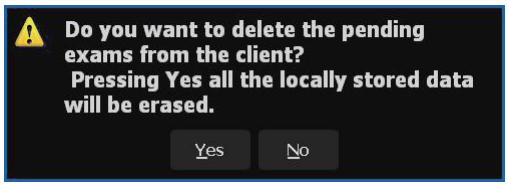
5) Press the Home button to display the HOME screen.

6) Press the Exams [Exams] button to check the test result data on the EXAMS screen.

- To delete the test result data

1) Press the Delete data [Delete data] (*B) button.

The message to the right is displayed.



2) Press the Yes button and then the Home button to return to the HOME screen.

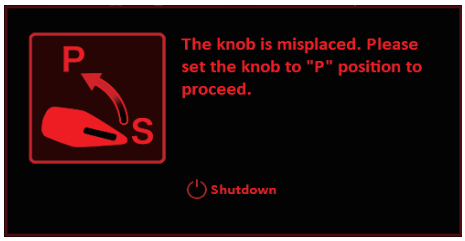
○ Errors related to scotopic filter

The following errors occur only in the type S.

- At device start-up

This error occurs when the operator starts the device when the filter knob is set to the “S” position or when the filter knob is not properly set to the “S” position.

The message shown to the right appears.



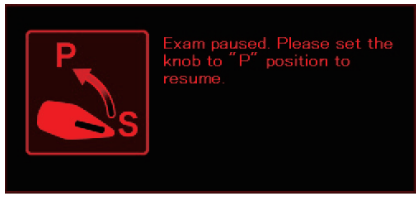
Turning the filter knob to the “P” position closes the message and displays the home screen.

When performing the test in the scotopic environment, turn the filter knob to “S” position after the process above.

- During test

This error may occur when the operator turns the filter knob from the “P” to “S” position during the test.

The message shown to the right appears and the test stops.

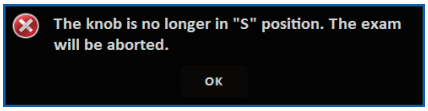


Turning the filter knob to the “P” position closes the message and enables operator to restart the test.

- During scotopic microperimetry test / scotopic fixation test

This error may occur when the operator turns the filter knob from the “S” to “P” position during the test.

The message shown to the right appears and the test in the scotopic environment finishes.



Pressing [OK] closes the message and displays the last test result screen before the test finishes.

< To save the test result >

Press [Accept] in the lower right of the test result screen.

↓ The test result is saved and the View screen is displayed.

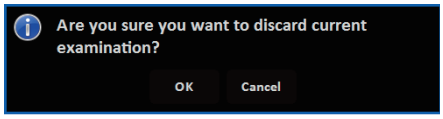
[Register]: Pressing this button performs the off-line registration. *“3.7 Off-line Registration” (page 106)*

[Home]: Pressing this button displays the Home screen.

< To discard the test result >

Press [Discard] in the lower left of the test result screen.

↓ The message shown to the right appears.



[OK]: Pressing this button discards the test result and displays the Home screen.

[Cancel]: Pressing this button returns to the test result screen.

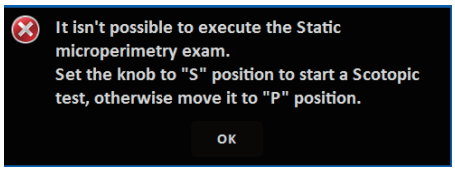
When the operator turns the filter knob to the “S” position then presses [OK], the status changes the same as above.

- When the operator starts the test without turning the filter knob to correct position (neither “P” nor “S” position)

  This error may occur when the operator attempts to start the test without setting the filter knob to the proper position (“P” or “S” position).

  The message shown to the right appears.

  (when the operator presses the Exam button without selecting any patient, the error appears even after the patient is selected.)



Example: Microperimetry test

Pressing [OK] closes the message and displays the home screen.

< When the operator presses [OK] after setting the filter knob to the desired position >

The following occurs.

The error window disappears.（If the error window appears again, press [OK].）

↓

The home screen appears corresponding to the position “P” or “S”.

Restart the test again.

4.3 Attaching Chinrest Paper

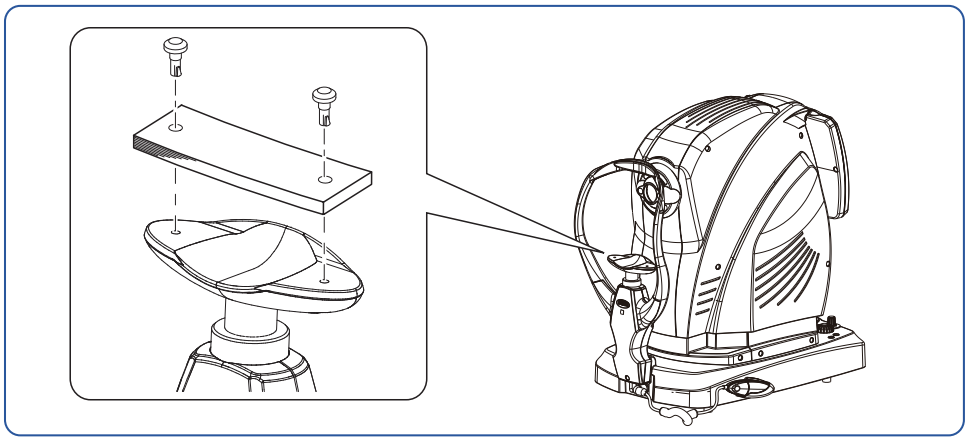
1 Pull out the two chinrest paper pins from the chinrest.

2 Remove a proper amount of chinrest paper from a new pad.

A new pad of chinrest paper cannot be attached to the chinrest at one time. Be sure to use a pad of 6 mm or less removed from the whole pad.

3 Insert the chinrest paper pins into the chinrest paper.

Insert the chinrest paper pins into the holes on the chinrest paper.



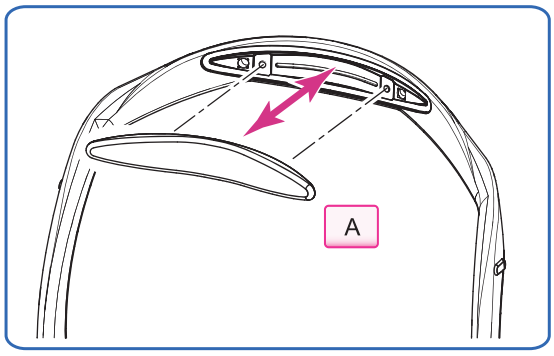
4 Attach the chinrest paper to the chinrest

1) While holding the chinrest paper pins and chinrest paper, insert a chinrest paper pin into one of the two holes on the chinrest.
2) Insert the other chinrest paper pin into the other hole on the chinrest.

4.4 Forehead Rest Pad Replacement

■ Magnetic forehead rest pad (30611-1520)

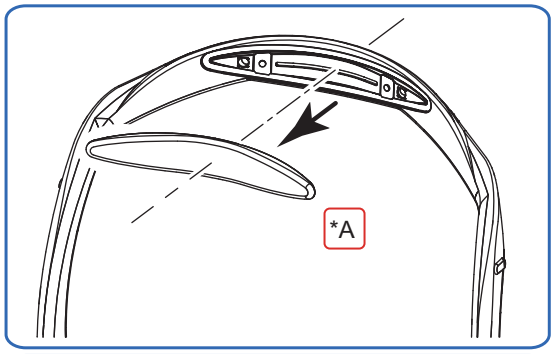
The forehead rest pad (made of ABS resin) A included in the standard configuration is magnetically attachable. Attach or remove it in the orientation as shown to the right.



■ To replace with the softer, designated replacement, polyester elastomer forehead rest pad, use the procedure below.

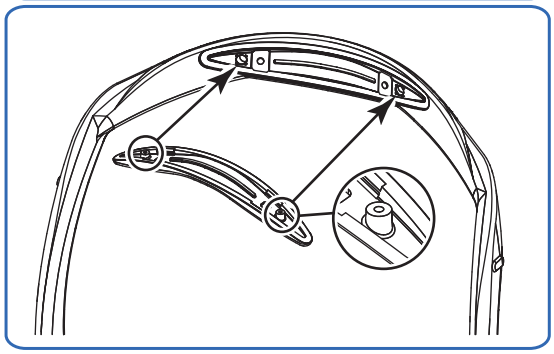
1 Remove the forehead rest pad (*A) from the frame.

Hold the edge of the forehead rest pad with two fingers and pull it up.



2 Attach a new forehead rest pad.

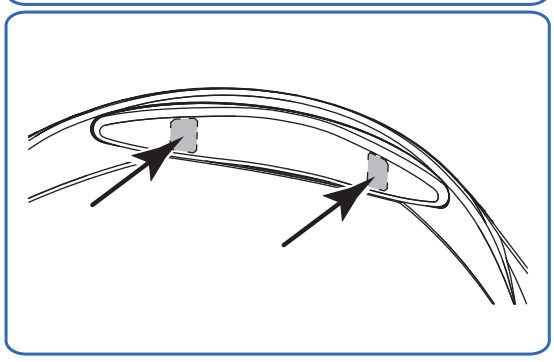
1) Align the clasps of the forehead rest pad to the holes in the frame.



2) Attach the forehead rest pad by pressing over the fastener positions on both sides.

   The forehead rest pad is locked by the fasteners.

3) Confirm that the forehead rest pad is securely attached.



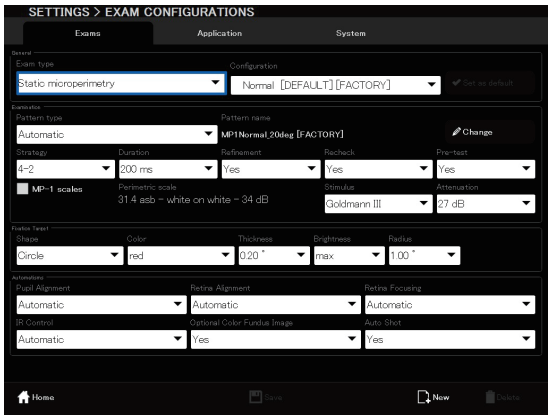
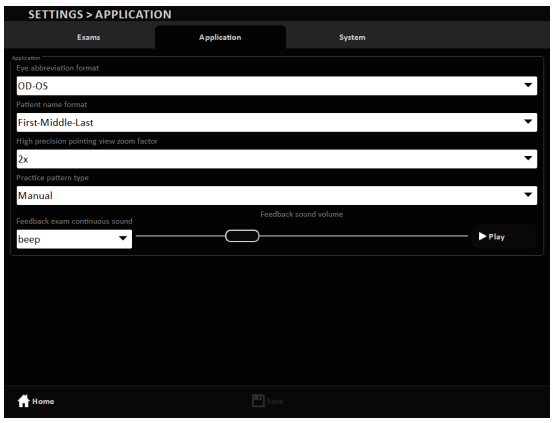
4.5 Parameter Settings

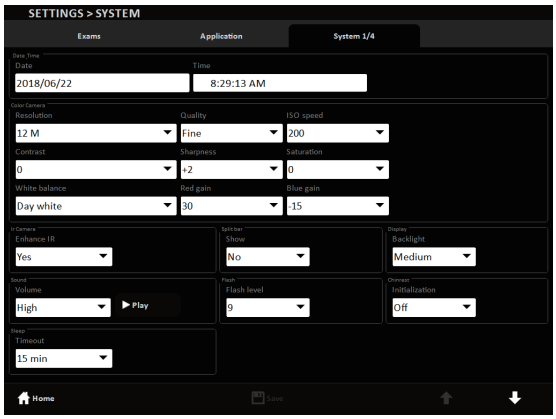
4.5.1 Setting procedure

Change the settings of the device on the Settings screen.

1 To display the Settings screen, press Settings Settings in the lower right of the HOME screen or the screen before the test starts.

2 Press Exams Exams, Application Application, or System System in the upper left of the Settings screen to display the desired setting items.

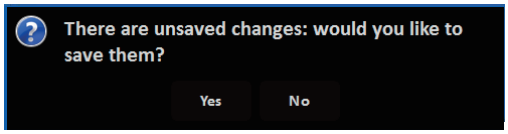
Exams	EXAM COMFIGURATIONS: Test configuration settings 
Application	APPLICATION: Right / Left eye indication, patient name display, zoom, microperimetry test practice, and confirmation sound for Feedback exam. 

System	SYSTEM (1/4 to 4/4) Setting items: 1/4: Observation camera, fundus image camera, beep sound, sleep time, LCD brightness, clock, focus bar, default flash intensity for fundus image capture, and chinrest initialization 2/4: Network Confirmation items: 3/4: Software version 4/4: Software license terms 

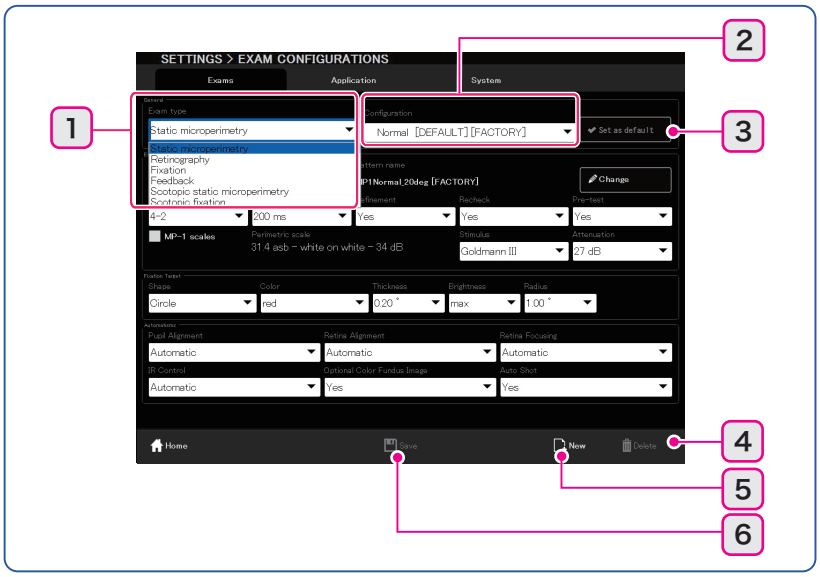
3 Change the settings as desired.

When attempting to move to another screen before saving the settings, the saving confirmation message appears.

Select save “Yes” or abandon “No”.



4.5.2 Exam setting



1 Exam type

Press the “Exam type” field and select the desired test type from the displayed pull-down menu (Static microperimetry, Retinography, Fixation, Feedback, Scotopic static microperimetry, and Scotopic fixation).

2 Configuration

Press the “Configuration” field and select the desired test configuration from the displayed pull-down menu (registered test configuration list).

The selected test configuration is displayed in each setting field.

Note

- The test configuration named “FACTORY”, is the pattern specified by the manufacturer. It cannot be deleted or changed. Only configurations created by the user can be deleted or changed.
  However, the “FACTORY” test configuration name can be copied to create a new test configuration.
  “● *Procedures to create a new test configuration by copying the test configuration named, “FACTORY”.” (page 124)*

3 Set as default button

The selected test configuration is set as the default. (The test configuration will be displayed on the Test button of the HOME screen.)

DEFAULT is displayed as the name of test configuration set as the default.

Ex.: Normal [DEFAULT][FACTORY]

4 Delete button

The selected test configuration is deleted.

5 New button

A new test configuration can be created.

1) Press the New button.
   The Configuration field becomes blank.
2) Select the desired setting for each field.
3) Press the Save button.

6 Save button

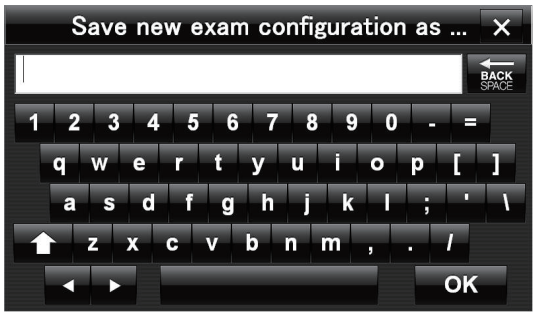
The changed or newly created test configuration is saved and registered.

- Procedures when the settings are changed

1) After changing the settings, press the Save button.
   The changed settings are saved.

- Procedures when a new test pattern is created

1) Press the Save button.
   The keyboard appears.
   "● Patient ID entry: How to use the keyboard" (page 64)



- Procedures to create a new test configuration by copying the test configuration named, "FACTORY".

1) Select the test configuration with the desired "FACTORY".
2) Change the desired settings with each settings.
3) Press the Save button.
   The keyboard appears.
   "● Patient ID entry: How to use the keyboard" (page 64)

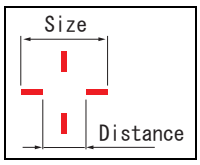
○ Microperimetry test settings

Select from the pull-down menu.

Note

• “Distance” means the angle of view as projected from the device.

General	
Exam type	Select Static microperimetry
Configuration*1	Test configuration Select from the registered configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing to the fundus. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Optional Color Fundus Image	Choose whether or not to perform Optional Color Fundus Image. Yes / No No: During the test, the Auto Shot button is not displayed on the test screen.
Auto Shot	Select auto shot function (color fundus image capture) Yes / No
Fixation Target*2	
Shape	Fixation target shape Single Cross ( ) / Circle ( ) / Four Crosses ( ) / Four Lines( )
Color	Fixation target color white / yellow / blue / red
Thickness (width)	Fixation target width Unit: angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max / high / medium / low / very low

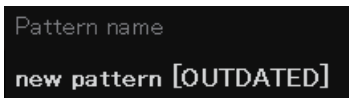
Size / Radius / Size Distance	Fixation target size　Unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5°and 1.00° to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）: 0.5°and 1.00° to 19.00°(1°increments) Condition : [Size]≥[Distance]+0.5 
Examination	
Pattern type	Stimuli arrangement Automatic / Semi-automatic / Manual / Peri-papillary
Pattern name[*1]	Stimuli arrangement pattern (Only when Pattern type is set to Automatic.) Press the Change button to display the list of the registered stimuli arrangement patterns and select one from the list.
Radial stimuli	The number of stimuli on a radial line (only when Pattern type is set to Peri-papillary) 1 to 10
Distance from polygon	Distance from the optic disc outline. Unit: angle of view (only when Pattern type is set to Peri-papillary) 0.0 to 5.0° (0.1° increments)
Stimuli distance	Distance between stimuli on a radial line. Unit: angle of view (only when Pattern type is set to Peri-papillary) 0.1 to 5.0° (0.1° increments)
Strategy[*3]	Threshold strategy 4-2 / 4-2(fast) / 4-2-1 / 4-2-1(fast)
Duration	Stimulus duration 100ms / 200ms
Refinement[*4]	Stimuli can be added. (When Pattern type is set to Automatic, Semi-automatic or Peri-papillary) Yes / No
Recheck[*5]	The tested stimuli can be projected for recheck. Yes / Yes+collision check / No
Pre-test[*6]	Stimuli projection Pre-test (When Pattern type is set to Automatic, Semi-automatic or Peri-papillary) Yes / No
Perimetric scale	Microperimetry scale “☐MP-1 scales” [*7] not checked: 31.4asb-white on white-34dB (standard) Touch “☐MP-1 scales” [*7] to check and select: 31.4asb-white on white-34dB / 4asb-white on white-20dB / 4asb-white on white-34dB
Stimulus	Stimuli size Goldmann I / Goldmann II / Goldmann III / Goldmann IV / Goldmann V

Attenuation	Initial setting for the stimuli luminance (Only when Pattern type is set to Automatic.) 0 dB to 34 dB (1 dB increments)

*1: After editing or deleting a registered stimuli arrangement pattern with MP Viewer, when the test configuration using the registered pattern is selected, [OUTDATED] is displayed after the name as shown below.

For the test configuration in this case, the stimuli arrangement pattern before editing or deleting can be used. The stimuli arrangement pattern before editing and deleting cannot be used to create any new configuration.

ex):



*2: The fixation target can be changed in the Test screen. *"14 Fixation target setting button" (page 31)*

*3: Threshold strategy

4-2, 4-2 (fast):

When the patient does not respond to the initial stimulus, the attenuation value is decreased by 4 dB until the patient perceives the stimulus (first reversal). Once the intensity at which the stimulus is perceived has been determined, the value is then increased by 2 dB until the patient no longer perceives the stimulus (second reversal).

When the patient responds to the initial stimulus, the attenuation value is increased by 4 dB until the patient no longer perceives the stimulus (first reversal). Once the intensity at which the stimulus is not perceived has been determined, the value is then decreased by 2 dB until the patient perceives the stimulus again (second reversal).

Test time is shorter with 4-2 (fast) compared to 4-2.

4-2-1, 4-2-1 (fast):

In addition to 4-2 threshold strategy, the value is increased (or decreased) by 1 dB until the patient no longer responds (or until the patient responds) to the stimulus (third reversal).

Test time is shorter with 4-2-1(fast) compared to 4-2-1.

*4: The test can be continued by adding stimuli. *"O Additional test" (page 76)*

*5: Specify the completed test point to restart the test. *"O Additional test" (page 76)*

*6: The stimuli pattern is divided into quarters and one stimulus in each quadrant is projected to determine the initial luminance for the other stimuli in each quadrant.

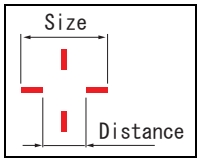
*7: When the box is checked, the perimetric scale can be selected with the background luminance 4 asb, equivalent to NIDEK MP-1.

○ Retinography

Select from the pull-down menu.

Note

• “Distance” means the angle of view as projected from the device.

General	
Exam type	Retinography selection
Configuration	Test configuration Select from the registered test configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Auto Shot	Choose whether or not to automatically perform color fundus image capture. Yes / No
Fixation Target*1	
Shape	Fixation target shape Single Cross (+) / Circle (◯) / Four Crosses (✛) / Four Lines(⁞)
Color	Fixation target color white / yellow / blue / red
Thickness (width)	Fixation target width unit: angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max / high / medium / low / very low
Size / Radius / Size Distance	Fixation target size unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5°and 1.00° to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）: 0.5°and 1.00° to 19.00°(1°increments) Condition : [Size]≥[Distance]+0.5 

*1: The fixation target can be changed on the Test screen. *“14 Fixation target setting button” (page 31)*

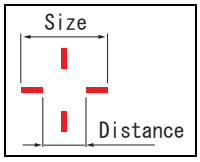
○ Fixation

Select from the pull-down menu.

Note

• “Distance” means the angle of view as projected from the device.

General	
Exam type	Fixation selection
Configuration	Test configuration Select from the registered configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing to the fundus. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Optional Color Fundus Image	Choose whether or not to perform Optional Color Fundus Image. Yes / No No: During the test, the Auto Shot button is not displayed on the test screen.
Auto Shot	Select auto shot function (color fundus image capture) Yes / No
Background	
Luminance range	Background luminance “☐MP-1 Luminances” *1 not checked: 31.4asb (standard) Touch “☐MP-1 Luminances” *1 and check to select: 4asb
Fixation Target*2	
Shape	Fixation target shape Single Cross (+) / Circle (◯) / Four Crosses (✣) / Four Lines(⁻¦⁻)
Color	Fixation target color white / yellow / blue / red
Thickness (width)	Fixation target width unit: angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max / high / medium / low / very low

Size / Radius / Size Distance	Fixation target size unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5° and 1.00 to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）：0.5°and 1.00° to 19.00°(1°increments) Condition：[Size]≥[Distance]+0.5 
Examination	
Duration	Test duration 5s to 3600s (5s increments)

*1: When the box is checked, the background luminance 4 asb, equivalent to NIDEK MP-1 can be selected.

*2: The fixation target can be changed on the Test screen. *"14 Fixation target setting button" (page 31)*

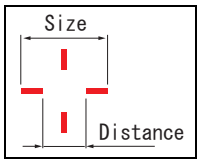
○ Feedback exam.

Select from the pull-down menu.

Note

- "Distance" means the angle of view as projected from the device.

General	
Exam type	Select Feedback
Configuration	Test configuration Select from the registered configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing to the fundus. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Optional Color Fundus Image	Choose whether or not to perform Optional Color Fundus Image. Yes / No No:During the test, the Auto Shot button is not displayed on the test screen.
Auto Shot	Select auto shot function (color fundus image capture) Yes / No
Fixation Target*1	

Shape	Fixation target shape Single Cross( ) / Circle( ) / Four Crosses( ) / Four Lines( )
Color	Fixation target color white / yellow / blue / red
Thickness	Fixation target width Unit: angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max/ high / medium/ low / very low
Size / Radius / Size Distance	Fixation target size Unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5°and 1.00° to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）: 0.5°and 1.00° to 19.00°(1°increments) Condition : [Size]≥[Distance]+0.5 
Examination	
Trl radius	TRL target width Unit : angle of view 0.5° to 5.0° (0.5°increments)
Feedback stimulus	Choose whether or not to display the Feedback stimulus None / Checkerboard
Side / Square side / Frequency	Settings of Checkerboard size, check pattern size, check pattern frequency When Checkerboard display is enabled Side（size）: 2° / 4° / 8° （Unit: angle of view) Square side（check pattern size）: 0.5° / 1° （Unit: angle of view） Frequency（check pattern inversion frequency）: 1 to 25Hz（1Hz increments）
Background	
Luminance range	Background luminance When no check mark is put in [☐ MP-1 Luminances][*2] : 31.4asb （standard） Put a check into [☐ MP-1 Luminances][*2] by directly touching it, then select 4asb

*1 : The fixation target can be changed on the Test screen. *"14 Fixation target setting button" (page 31)*

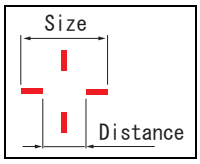
*2 : When the box is checked, the background luminance 4 asb, equivalent to NIDEK MP-1 can be selected.

○ Setting the scotopic microperimetry test

Select from the pull-down menu

Note

- “Distance” means the angle of view as projected from the device.

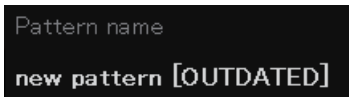
General	
Exam type	Select Scotopic static microperimetry.
Configuration*1	Test configuration Select from the registered test configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Fixation Target*2	
Shape	Fixation target shape Single Cross(+)/ Circle(◯) / Four Crosses(✛) / Four Lines(⁻¦⁻)
Color	Fixation target color Fixed to white
Thickness	Fixation target width　Unit：angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max/ high / medium/ low / very low
Size / Radius / Size Distance	Fixation target size Unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5°and 1.00° to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）：0.5°and 1.00° to 19.00°(1°increments) Condition：[Size]≥[Distance]+0.5 
Examination	
Pattern type	Stimulus position Automatic / Semi-automatic / Manual / Peri-papillary

Pattern name*1	Name of stimulus position pattern (only available when Pattern type is set to Automatic) Displays the list of stimulus target position pattern by Change button and asks operator to select the item from the list
Radial stimuli	The number of stimulus points in radial direction (available only when Pattern type is set to Peri-papillary) 1 to 10
Distance from polygon	Distance from the external edge of the setting optic disc area Unit: angle of view (available only when the Pattern type is set to Peri-papillary) 0.0 to 5.0°（0.1° increments）
Stimuli distance	Distance between stimulus points in radial direction Unit: angle of view (available only when Pattern type is set to Peri-papillary) 0.0 to 5.0°（0.1° increments）
Strategy*3	Threshold value determination 4-2 / 4-2 (fast) / 4-2-1 / 4-2-1 (fast)
Duration	Stimulus target projection time 100ms / 200ms
Refinement*4	Examination with added of examination point (available when selecting Pattern type: Automatic , Semi-automatic, or Peri-papillary) Yes / No
Recheck*5	Re-examination with past exam point Yes / Yes+collision check / No
Pre-test*6	Stimulus target projection pre-test (available when selecting Pattern type: Automatic , Semi-automatic or Peri-papillary) Yes / No
Perimetric scale	Perimetry scale 0.003asb-white on white-24dB fixed
Stimulus	Stimulus target size Goldmann Ⅰ / Goldmann Ⅱ / Goldmann Ⅲ / Goldmann Ⅳ / Goldmann Ⅴ
Attenuation	Setting of luminance at stimulus target projection (available only when Pattern type is set to Automatic) 0dB to 24dB(1dB increments）

*1: After editing or deleting a registered stimuli arrangement pattern with MP Viewer, when the test configuration using the registered pattern is selected, [OUTDATED] is displayed after the name as shown below.

For the test configuration in this case, the stimuli arrangement pattern before editing or deleting can be used. The stimuli arrangement pattern before editing and deleting cannot be used to create any new configuration.

ex):



*2: The fixation target can be changed in the Test screen. *"14 Fixation target setting button" (page 31)*

*3: Threshold strategy

4-2, 4-2 (fast):

When the patient does not respond to the initial stimulus, the attenuation value is decreased by 4 dB until the patient perceives the stimulus (first reversal). Once the intensity at which the stimulus is perceived has been determined, the value is then increased by 2 dB until the patient no longer perceives the stimulus (second reversal).

When the patient responds to the initial stimulus, the attenuation value is increased by 4 dB until the patient no longer perceives the stimulus (first reversal). Once the intensity at which the stimulus is not perceived has been determined, the value is then decreased by 2 dB until the patient perceives the stimulus again (second reversal).

Test time is shorter with 4-2 (fast) compared to 4-2.

4-2-1, 4-2-1 (fast):

In addition to 4-2 threshold strategy, the value is increased (or decreased) by 1 dB until the patient no longer responds (or until the patient responds) to the stimulus (third reversal).

Test time is shorter with 4-2-1(fast) compared to 4-2-1.

*4: The test can be continued by adding stimuli. *"O Additional test" (page 76)*

*5: Specify the completed test point to restart the test. *"O Additional test" (page 76)*

*6: The stimuli pattern is divided into quarters and one stimulus in each quadrant is projected to determine the initial luminance for the other stimuli in each quadrant.

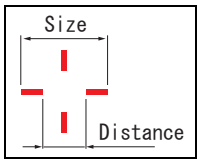
O Scotopic fixation

Select from the pull-down menu.

Note

- "Distance" means the angle of view as projected from the device.

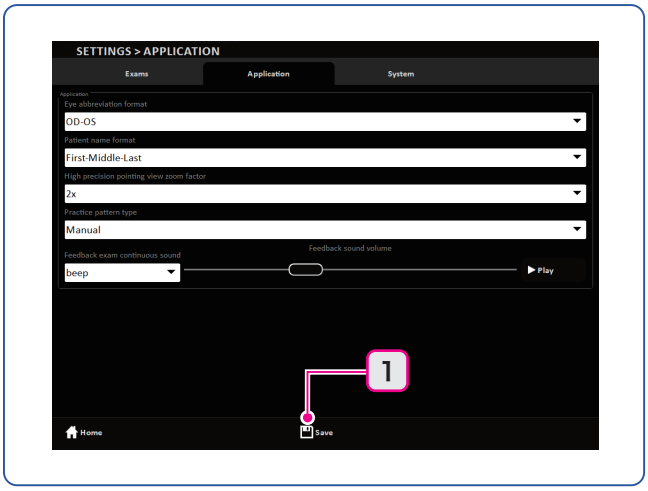
General	
Exam type	Select Scotopic fixation.
Configuration	Test configuration Select from the registered configuration list.
Automatism	
Pupil Alignment	Choose whether or not to perform auto alignment to the eye front. Automatic / Manual
Retina Alignment	Choose whether or not to perform auto alignment to the fundus. Automatic / Manual
Retina Focusing	Choose whether or not to perform auto focusing to the fundus. Automatic / Manual
IR Control	Choose whether or not to perform automatic illumination control of the fundus observation illumination (infrared light). Automatic / Manual
Background	
Luminance range	Background luminance Fixed to 0.003asb
Fixation Target*2	
Shape	Fixation target shape Single Cross(+)/ Circle(◯) / Four Crosses(✛) / Four Lines(⁞)
Color	Fixation target color Fixed to white
Thickness	Fixation target width Unit: angle of view 0.10° / 0.20° / 0.30° / 0.40° / 0.50°
Brightness	Fixation target brightness max/ high / medium/ low / very low

Size / Radius / Size Distance	Fixation target size Unit: angle of view Options in the pull-down menu When Single Cross is selected Size: 1.00° to 20.00°(1°increments) When Circle is selected Radius: 0.5°and 1.00° to 20.00°(1°increments) When Four Crosses is selected Size (size of each cross): 1.00° to 20.00°(1°increments) Distance (distances between upper and lower, and right and left crosses): 1.00° to 20.00°(1°increments) When Four Lines is selected Size (distances between external edge of upper and lower, and right and left lines): 1.00° to 20.00°(1°increments) Distance (distances between inner edge of upper and lower, and right and left lines）: 0.5°and 1.00° to 19.00°(1°increments) Condition : [Size]≥[Distance]+0.5 
Examination	
Duration	Test duration 5s to 3600 s（5 s increments）

*1: When the box is checked, the background luminance 4 asb, equivalent to NIDEK MP-1 can be selected.

*2: The fixation target can be changed on the Test screen. *"14 Fixation target setting button" (page 31)*

4.5.3 Application setting



Select from the pull-down menu.

Note

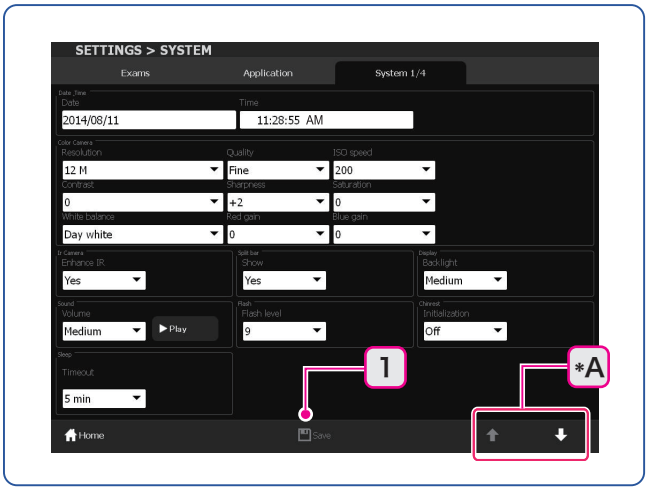
- The value underlined in the table is the default value.

Application	
Eye abbreviation format	Eye indication R-L / OD-OS
Patient name format	Specify the patient name format. Last-Middle-First / First-Middle-Last
High precision pointing view zoom factor	Zoom 1x / 2x / 4x
Practice pattern type	Stimuli arrangement during microperimetry practice test. Manual / Automatic
Feedback exam continuous sound	Sound heard when the fixation target enters the TRL on the Feedback exam. screen. beep/ childhood/ guitar/ piano/ tomorrow Play : Pressed to check the selected sound Dragging the slider : adjusts the sound volume as “small” ← → ”large”

1 Save Save button

The changed settings are saved.

4.5.4 System settings



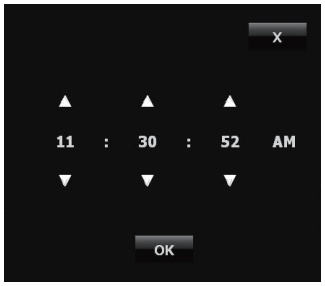
System settings consist of four pages. The page can be changed with the (▲, ▼) (*A) button.

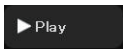
○ System1/4

When not instructed, change the item from the pull-down menu.

Note

- The value underlined in the table is the default value.

Date Time	
Date	yyyy/mm/dd Press the entry field and enter with the calender. *"● Entering the date of birth" (page 66)*
Time	HH:MM:SS AM/PM Press the time field and enter with the input window. Change the hour, minute, or second, with the feed buttons (▼ , ▲). Press the OK button to confirm the entry HH: 12:MM:SS AM up to 11:MM:SS PM MM: 00 to 59 SS: 00 to 59 
Color Camera (fundus image capture settings)	
Resolution	Image size (Pixels) 1M / 3M / 5M / 8M / <u>12M</u>
Quality	Image quality <u>Fine</u> / Normal / Basic
ISO speed	ISO sensitivity 100 / <u>200</u> / 400
Contrast	Contrast -2 / -1 / <u>0</u> / +1 / +2
Sharpness	Sharpness 0 / +1 / <u>+2</u> / +3 / +4 / +5

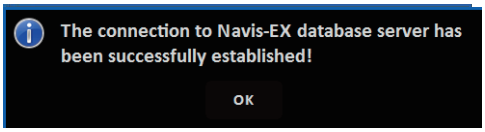
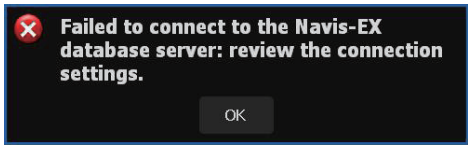
Saturation	Saturation -2 / -1 / 0 / +1 / +2
White balance	White balance Day white / Color temperature
Red gain	White balance correction R value. (When White balance is set to Day white) -128 to 30 to 127 (1 increments)
Blue gain	White balance correction B value. (When White balance is set to Day white) -128 to -15 to 127 (1 increments)
Color Temperature	Color temperature (When White balance is set to Color Temperature) 4000 K to 5000 K to 8000 K (100 K increments)
IR Camera (observation image setting)	
Enhance IR	Enhancement of an observation image Yes / No
Split bar	
Show	Choose whether or not to use a focus bar. Yes / No
Display	
Backlight	LCD back light brightness Low / Medium / High
Sound	
Volume	Beep tone Off / Low / High  Play: Check the selected beep tone.
Flash	
Flash level	Default value of flash intensity for color fundus image capture When the ISO speed is set to 100: 10 to 13 to 16 (1 increments) When the ISO speed is set to 200: 6 to 9 to 12 (1 increments) When the ISO speed is set to 400: 2 to 5 to 8 (1 increments)
Chinrest	
Initialization	Initialization of the chinrest position (every time when the test is started, canceled, or finished) Off / On
Sleep	
Timeout	Sleep mode time *"6 Pilot LED" (page 13)* 5 min / 10 min / 15 min

1  **Save button**

The changed settings are saved.

○ System 2/4

Network setting for connecting with NAVIS-EX

Data Management	
NAVIS-EX	Choose whether or not to use NAVIS-EX. Select or deselect the box "☐Use NAVIS-EX".
Server name/IP address	Server name/IP address entry Press the entry field and enter with the keyboard. "● *Patient ID entry: How to use the keyboard" (page 64)*
Port number	Port number entry Press the entry field and enter with the keyboard. "● *Patient ID entry: How to use the keyboard" (page 64)*
Test connection	Test for connection with NAVIS-EX Press the Test connection...  button to perform the test. Test connection succeeded:  Test connection failed:  If the test is failed, check the server name, port number, connection PC setting, and LAN cable connection.

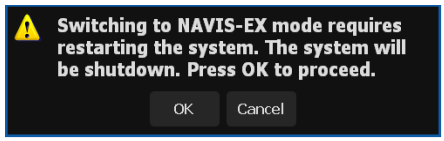
1 Save Save button

The changed settings are saved.

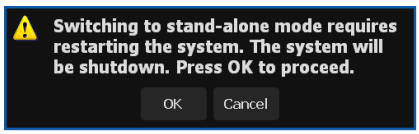
1) Press the Save button.

   A message is displayed.

   When NAVIS-EX is connected:



   When NAVIS-EX is not connected (standalone):



2) Press the OK button.

   The input contents are saved and the MP-3 shuts down.

3) Restart the device.

○ System3/4

The device information such as serial number and software information.

○ System4/4

The license information of the software on the device.

4.6 Cleaning

If the cover or the LCD monitor becomes contaminated, wipe them with a soft cloth. For severe stains, soak the cloth in a neutral detergent, wring well, and then wipe. Finally dry with a soft, dry cloth.

⚠ CAUTION

- Never use an organic solvent such as paint thinner or alcohol.
- Wipe the LCD touch-screen gently with a soft cloth. Never press hard objects against or place magnetic objects near the LCD touch-screen.

  The surface of the LCD may be damaged. Device malfunction may also result.
- Never use a sponge or cloth soaked in water.

  Water may leak into the interior of the device resulting in malfunction.

4.6.1 Cleaning the objective lens

Fingerprints or dust on the objective lens reduces the quality of the fundus images. Check the cleanliness of the objective lens before use. If the objective lens is contaminated, clean it.

1 Use the blower to blow off any dust from the objective lens.

2 Wrap the cleaning paper around a thin stick (or use a cotton swab) and dip the stick into the alcohol solution so that an appropriate amount soaks into the tip of the stick, then wipe the objective lens.

Note

- Do not use a hard stick such as one made of metal. Use something that will not scratch the glass.
- Starting from the center, gently wipe the lens by moving the stick outward in a spiral.

3 If the lens is still contaminated, use a new swab and repeat the above process until the lens is clean.

4.7 Consumables and Maintenance Parts List

Part name	Part number	Remarks
Chinrest paper	32903-M047	1 stack
Magnetic forehead rest pad	30611-1520	Forehead rest pad Made of ABS resin
Forehead rest pad	15411-M752	Forehead rest pad Made of polyester elastomer

○ Parts to be maintained by service personnel

Part name	Part number	Remarks
Xenon flash lamp	15411-E101	1 set

The service life of the xenon flash lamp is 15,000 times of emission with the maximum intensity use condition (level 17).

A lower intensity extends the service life. If images are captured only with the standard level 9, the service life may become 10 times or more longer than the above.

After replacing any consumables, be sure to restock them with spares.

5 SPECIFICATIONS AND TECHNICAL INFORMATION

5.1 Specifications

• Microperimetry test	Visual field angle	40°
	Maximum stimulus luminance	10,000 asb
	Background luminance	31.4 asb / 4 asb Scotopic microperimetry test: 0.003asb
	Stimuli luminance threshold range	Standard: “Background luminance: 31.4 asb” 10031.4 asb (0 dB) to 35.4 asb (34 dB) (Contrast: 319.5 to 0.13) Equivalent to NIDEK MP-1 “Background luminance: 4 asb” 404 asb (0 dB) to 8 asb (20 dB) (Contrast: 101 to 1.01) 1,004 asb (0 dB) to 4.4 asb (34 dB) (Contrast: 251 to 0.1) Scotopic microperimetry test: [background luminance: 0.003asb] 0.303asb (0dB) to 0.0042asb (24dB) (Contrast: 101 to 0.4)
	Stimulus duration	100 msec / 200 msec
	Stimuli size	Goldmann I / II / III / IV / V compatible
	Threshold strategy	4-2 / 4-2-1
	Static stimulus	
	White on White	
• Fundus photography	Picture angle	45° ±5% (when the patient's eye refraction is 0D)
	Zoom	× 0.42
	Camera resolution	Center 60 lines/mm or greater Intermediary 40 lines/mm or greater Periphery 25 lines/mm or greater
	Pixel pitch on the fundus	4.4 µm or less
	Minimum pupil diameter required	ø4 mm
• Fixation test	Fixation target (used in conjunction with the microperimetry test)	Shape: select from four types of shape
		Color: select from white / yellow / red / blue

• Working distance	45.7 mm (distance from the objective lens to the corneal surface)	
• Diopter correction range	-25 to +15 D	
• Fundus auto focus range	-12D to +15D	
• Other functions	Observation / display method	10.4-inch color LCD touch-screen
• Power input	Voltage, frequency	AC 100 to 240 V ±10%, 50/60 Hz
	Power consumption	160 VA
• Dimensions and mass	Dimensions	334 (W) × 562 (D) × 560 (H) mm
	Mass	36 kg
• Environmental conditions (during use)	Temperature	10 to 35°C (50 to 95°F)
	Humidity	30 to 90% (non-condensing)
	Atmospheric pressure	800 to 1060 hPa
	Installation location	Indoors
	Others	A well ventilated place free from hazardous particles, smoke, or fumes
• Environmental conditions (during transport and storage)	Temperature	-30 to 60°C (-22 to 140°F) (during transport), -10 to 55°C (14 to 131°F) (during storage)
	Humidity	10 to 95% (non-condensing)
	Atmospheric pressure	700 to 1060 hPa
• Others	Service life	8 years from the date of initial operation * Proper maintenance, inspection, and consumable parts replacement are necessary. *"Maintenance" (page 6)* *"4.7 Consumables and Maintenance Parts List" (page 141)*
	Unit per package	1 unit
• Classifications	Protection against electrical shock: Class I ME equipment Protection against electrical shock (applied parts): Type B applied part Protection against harmful ingress of water or particulate matter: IPX0 Method(s) of sterilization: ME equipment that does not contain any part that needs sterilization. Suitability for use in an oxygen rich environment: ME equipment that is not intended for use in an oxygen rich environment. Mode of operation: Continuous operation	
Accessories		
• Standard accessories	Response button, response button holder, touch pen, pen stand, and power cable, chinrest paper, chinrest paper pin, objective lens cap, cap holder, blower, dust cover, operator's manual, quick reference guide, NAVIS-EX and license, MP Viewer for NAVIS-EX installation CD, MP viewer for NAVIS-EX operator's manual	
• Optional accessories	Motorized optical table: Type S (factory setting), Isolation transformer	

If you need information to ensure cybersecurity, contact Nidek or your authorized distributor.

5.2 Exam Setting: Test Configuration Settings

The test configuration and stimuli arrangement pattern presets by NIDEK (for the microperimetry test / scotopic microperimetry test) are as follows:

○ Test configuration

Test feature and configurations

AMD	Normally used for the patient with age-related macular degeneration (AMD). This configuration is used with the following settings. - Stimulus: Goldmann III, 200 msec - Threshold strategy: 4-2 - Fixation target: Single Cross, size 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Macula_20deg
Macular Hole	Normally used for the patient with macular hole. This configuration is used with the following settings. - Stimulus: Goldmann I, 200 msec - Threshold strategy: 4-2 - Fixation target: Circle, radius 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Macula_8deg
Maculopathy	Normally used for the patient with maculopathy. This configuration is used with the following settings. - Stimulus: Goldmann III, 200 msec - Threshold strategy: 4-2 - Fixation target: Circle, radius 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Macula_12deg
Medical	Normally used for the patient with age-related macular degeneration (AMD), diabetic retinopathy, retinal degeneration, or retinal vascular diseases or such. This configuration is used with the following settings. - Stimulus: Goldmann III, 200 msec - Threshold strategy: 4-2 - Fixation target: Circle, radius 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Medical_20deg
Normal	Normally used for the patient with no obvious eye diseases. This configuration is used with the following settings. - Stimulus: Goldmann III, 200 msec - Threshold strategy: 4-2 - Fixation target: Circle, radius 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Normal_20deg
Surgical	Normally used for the patient with macular hole, macular pucker, or retinal detachment. This configuration is used with the following settings. - Stimulus: Goldmann III, 200 msec - Threshold strategy: 4-2 - Fixation target: Circle, radius 1°, thickness 0.2°, color red, Brightness max - Pattern: MP1Surgical_20deg

Basic	Normally used for the scotopic microperimetry test. This configuration is used with the following settings. - Stimulus: Goldmann V, 200 msec - Threshold strategy: 4-2 (fast) - Fixation target: Circle, radius 3°, thickness 0.2°, Brightness max - Pattern: PerifovealBasic
Advanced	Normally used for the scotopic microperimetry test. This configuration is used with the following settings. - Stimulus: Goldmann IV, 200 msec - Threshold strategy: 4-2 (fast) - Fixation target: Circle, radius 3°, thickness 0.2°, Brightness max - Pattern: PerifovealAdvanced
NdkSctRed36p	Normally used for the scotopic microperimetry test. This configuration is used with the following settings. - Stimulus: Goldmann V, 200 msec - Threshold strategy: 4-2 (fast) - Fixation target: Circle, radius 3°, thickness 0.2°, Brightness max - Pattern: NdkSctRed36p

○ Stimuli arrangement pattern (Pattern name)

Feature of stimuli arrangement patterns

Humphery_10-2	This pattern consists of 68 stimuli within 20° angle of view.
MP1Macula_10deg	This pattern consists of 40 stimuli within 10° angle of view. This pattern is used to study the macular mid-section sensitivity in the specified range of angle of view.
MP1Macula_12deg	This pattern consists of 45 stimuli within 12° angle of view. This pattern is used for the configuration "Maculopathy".
MP1Macula_20deg	This pattern consists of 76 stimuli within 20° angle of view. This pattern is used for the configuration "AMD".
MP1Macula_8deg	This pattern consists of 45 stimuli within 8° angle of view. This pattern is used for the configuration "Macular Hole".
MP1Medical_20deg	This pattern consists of 29 stimuli within 20° angle of view. This pattern is used for the configuration "Medical".
MP1Normal_20deg	This pattern consists of 33 stimuli within2 0° angle of view. This pattern is used for the configuration "Normal".
MP1Retina_40deg	This pattern consists of 100 stimuli within 40° angle of view. As this test range is large, this pattern is normally used to study the retinal overall sensitivity.
MP1Surgical_20deg	This pattern consists of 33 stimuli within20° angle of view. This pattern is used for the configuration "Surgical".
PerifovealBasic	This pattern consists of 36 stimuli within 20° angle of view. This pattern is used for the detection of sensitivity at the fovea border.
PerifovealAdvanced	This pattern consists of 52 stimuli within 20° angle of view. This pattern is used for the detection of the sensitivity at the fovea boundary more detailed than PerifovealBasic.
NdkSctRed36p	This pattern consists of 32 stimuli within20° angle of view. This pattern is used for examination of the sensitivity at the fovea boundary.

5.3 Glossary

■ The following terms are used in the device and operator's manual.

Parameter	Explanation
asb (apostilb)	A unit to indicate background luminance and stimuli luminance. A larger value indicates a greater brightness.
BCEA	BCEA (Bivariate Contour Ellipse Area) indicates instability of the fixation point by size, area (angle of view), and major axis inclination of ellipses for three levels of standard deviation. Ellispe 68.2% (1Std Div): Ellipse that represents instability of fixation point within 68.2% Ellispe 95.4% (2Std Div): Ellipse that represents instability of fixation point within 95.4% Ellispe 99.6% (3Std Div): Ellipse that represents instability of fixation point within 99.6% List of references Timberlake et al. *Retinal Location of the Preferred Retinal Locus Relative to the Fovea in Scanning Laser Ophthalmoscope Images, Optometry and Vision Science, vol. 82, N. 3, pp. E177, 2005.*
False positive	False positive test False positive testing is performed during microperimetry test to check the patient's response (whether the patient does or does not press the response button) by occasionally presenting no stimuli.
False negative	False negative test False negative testing is performed during microperimetry test to check the patient's response (whether the patient does or does not press the response button) by presenting stimuli at a brightness and position that the patient previously responded to as perceptible.
Fixation Stability	Fixation stability is indicated by percentage of fixation points within the circle with 2° and 4° in diameter. List of references Fujii et al. *Patient selection for macular translocation using SLO, Ophthalmology, vol 109, nr. 9, 1999*
Feedback exam.	Similar function with the fixation test (the screen for the patient is mostly the same as those in fixation test.) The Feedback exam differs in the response sound produced corresponding to the angle of view that is created by the area that is specified by operator (cannot be seen from the patient's side) and the fixation target. Referring to this sound, the patient can recognize the TRL position (changing the stimuli or response sound may improve the patient's cognitive ability).
PRL	Preferred Retinal Locus It indicates a fundus area that is being used for patient's fixation. This area corresponds to the fovea in the normal eye. However, if the eye is affected with visual disorder for a long period of time, the area may be on a different position.

Parameter	Explanation
TRL	Trained [Target] Retinal Locus Targeted locus for moving the PRL by repeating the Feedback exam.
Scotopic	The brightness defined in the Figure 1 and 3 in the quoted literature below is indicated as “Scotopic environment”. Quoted literature: Barbur J L, et al.,Photopic,Mesopic, and Scotopic Vision and Changes in Visual Performance. Encyclopedia of the Eye(2010),Vol. 3, pp. 323-331.
white on white	The background and the stimuli are both white (achromate).
Auto alignment	A function to automatically align (forward and backward, right and left, up and down) to the eye front and the fundus
Auto shot	A function to automatically capture a color image when alignment and focus are optimized on the fundus
Auto tracking	Fundus images during the test are automatically tracked, compared to, and positioned on (forward and backward, right and left, up and down) the beginning image at the regular time intervals.
Auto focusing	A function to adjust focus on the retina automatically
Complete darkened room	A test room in the state with luminance below 0.1lux (Scotopic environment)

5.4 EMC (Electromagnetic Compatibility)

The device is suitable for use in hospitals except for near active HF surgical equipment and RF shielded rooms with an ME system for magnetic resonance imaging, where the intensity of electromagnetic disturbances is high, electrophysiology laboratories, or areas where short-wave therapy equipment is used.

⚠ WARNING

- Do not use the device near, on, or under other electronic equipment or electromagnetic disturbance sources. Otherwise, it could result in improper operation. If such use is necessary, the device and the other equipment should be observed to verify that they are operating normally.
- Use of accessories, cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result improper operation.
- Portable RF communications equipment (including peripherals such as antenna cables and external antennas) or electromagnetic disturbance sources as shown below should be used no closer than 30 cm (12 inches) to any part of the device, including the specified or provided cables. Otherwise, degradation of the performance of this equipment could result.

  The following are examples of electromagnetic disturbance sources:
  - Induction cooking appliance and ovens
  - RFID readers
  - Electronic article surveillance (EAS) systems
  - Sponge detection systems
  - Equipment used for position detection (e.g. in catheter labs)
  - Wireless power transfer charging systems for electrical vehicles

○ Specified cable

Part name	Cable Shielded	Ferrite Core	Length (m)
Power cable	No	No	2.5
Curl code (response button)	No	Yes	0.3
Speaker cable	No	Yes	0.45

○ Specified multimedia equipment

Specified multimedia equipment	Standard compliance
Network switch	Complied with CISPR 32 Class B
Computer	

○ Essential performance

Microperimetry function

Auto tracking function

Fundus image capture function

◆ Compliance for Emission Standard

Phenomenon	Product family standard	Compliance
Conducted and radiated RF emissions	CISPR 11	Group 1 Class B
Harmonic distortion	IEC 61000-3-2	*1
Voltage fluctuations and flicker	IEC 61000-3-3	*2

* 1 For the regions where the rated voltage is 220 V to 240 V, this device complies with this standard.
* 2 For the regions where the rated voltage (line to neutral) is 220 V to 250 V, this device complies with this standard.

◆ Test specifications for enclosure port immunity to RF wireless communications equipment

Test frequency (MHz)	Band (MHz)	Service	Modulation	Immunity test level (V/m)
385	380 to 390	TETRA 400	Pulse modulation 18 Hz	27
450	430 to 470	GMRS 460, FRS 460	FM ±5 kHz deviation 1 kHz sine	28
710	704 to 787	LTE Band 13, 17	Pulse modulation 217 Hz	9
745				
780				
810	800 to 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	28
870				
930				
1720	1700 to 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	28
1845				
1970				
2450	2400 to 2570	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band 7	Pulse modulation 217 Hz	28
5240	5100 to 5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	9
5500				
5785				

◆ Compliance for Immunity Standard

Phenomenon	Basic EMC standard	Immunity test levels
Electrostatic discharge	IEC 61000-4-2	±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air
Radiated RF electromagnetic field	IEC 61000-4-3	3 V/m 80 MHz - 2.7 GHz 80% AM at 1 kHz
Proximity fields from RF wireless communications equipment	IEC 61000-4-3	See “Test specifications for enclosure port immunity to RF wireless communications equipment”.
Electrical fast transients / bursts	IEC 61000-4-4	Input power port ±2 kV 100 kHz repetition frequency
		Signal input/output parts port ±1 kV 100 kHz repetition frequency
Surges Line-to-line	IEC 61000-4-5	Input power port ±0.5 kV, ±1 kV
Surges Line-to-ground		Input power port ±0.5 kV, ±1 kV, ±2 kV Signal input/output parts port ±2 kV
Conducted disturbances induced by RF fields	IEC 61000-4-6	3 V 0.15 MHz – 80 MHz 6 V in ISM bands between 0.15 MHz and 80 MHz 80% AM at 1 kHz
Rated power frequency magnetic fields	IEC 61000-4-8	30 A/m 50 Hz or 60 Hz
Voltage dips	IEC 61000-4-11	0% U_T; 0.5 cycle At 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315°
		0% U_T; 1 cycle and 70% U_T; 25/30 cycles Single phase: at 0°
Voltage interruptions	IEC 61000-4-11	0% U_T; 250/300 cycles