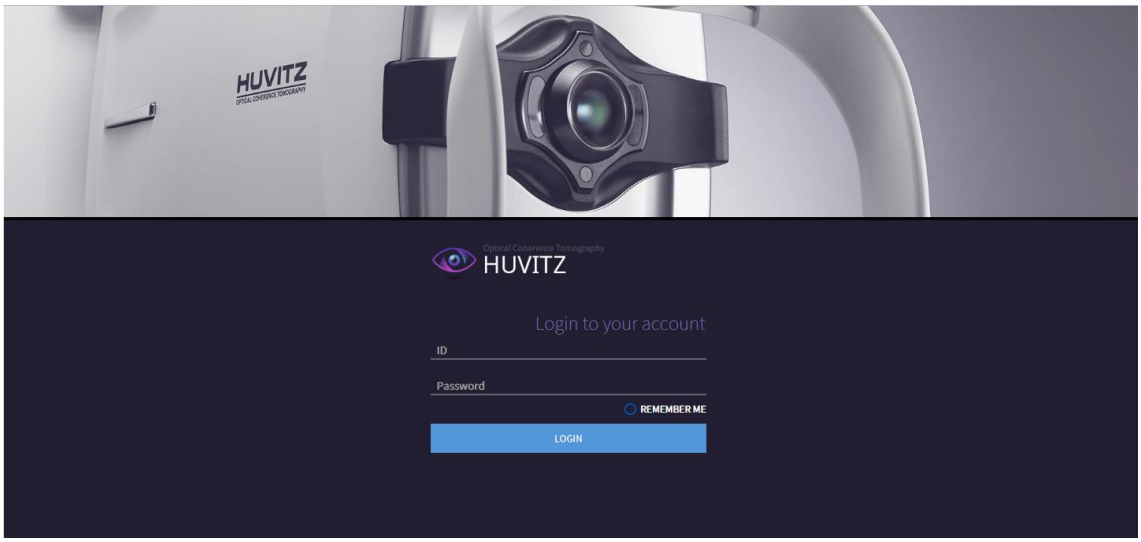
Huvitz

HUVITZ Integrated Image Server

HIIS-1

User Manual



■ Precautions

This product may malfunction due to the electromagnetic wave, generated from mobile phone, two-way radio, wireless calibration machine. Keep it away from device that affects this product.

This user manual's contents were examined carefully in detail, and we believe that they are accurate in overall. However, Huvitz does not assume any responsibility for any latent mistake or omission that results from the use of information included in this user manual.

Huvitz has the right to modify this product or product specifications any time, without special notification, and this modification may not be renewed in this document.

Huvitz does not guarantee any responsibilities for abnormal symptoms causing from the installation of S/W not related to the equipment

Do not install this program in HOCT-1/1F, and Huvitz does not guarantee any responsibilities for abnormal symptoms causing from the installation.

■ Revision History

Revision	Date	Approval	Description
A	2020.10.05	손 진 욱	Initial release
B	2022.06.03	손 진 욱	- Swiss Authorized Representative Information Added - Overview and Instruction regarding Myopic Management Analysis Screen Added
C	2022.11.30	손 진 욱	- Added Import Watcher daemon setting method. - Added equipment connection configuration diagram and connection setting method. - Added DICOM Setting

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(2022.06)

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CONTENT

1

1 Introduction

Overview

Huvitz Integrated Image Server, HIIS-1 (hereafter, HIIS-1) films eyeball's eyeground or retina's shape in a non-contact non-invasive manner, and it is the software that provides information that helps with the ophthalmic complications.
This software of the Server-Client structure exchanges data with the software built-into HUVITZ'S ophthalmic device (hereafter, device). PC with HIIS-1 server installed (hereafter, server) becomes Server while device becomes Client. Server and device (Client) operate regardless of the distance as long as they are in the same network. Here, same network includes Internet when seen broadly and even the 1:1 cable connection when seen narrowly.
Image filmed on the device is transmitted to the server and user can check the result filmed from the personal PC through Web browser. Personal PC does not need to be installed with special software, and it can be used with the regular Web browser such as Internet Explorer, Chrome, Safari and Firefox. (HIIS-1 is optimized to the latest Chrome version, and there may be function that does not operate in other Web browser.)

Intended Use

This software (HIIS-1) is a web-based software that can view, store, transmit, and analyze the medical images of patients acquired from ophthalmic imaging devices such as fundus cameras, optical coherence tomography, auto ref/keratometer, etc. on the computer where the software is installed.

Safety Caution

1. Do not make a diagnosis base on a single captured image. Doctors are responsible for making the final diagnosis based on the present and past medical records of the patient such as captured images. Without sufficient information, proper diagnosis may not be made.
2. User must not change the setting supported by the manufacturer. This change might make some trouble in program. The manufacturer isn't responsible for the problem.
3. The software must be operated by a trained and qualified person or under his or her supervision.
4. Repair of this instrument must be conducted by HUVITZ's service technicians or other authorized persons.
5. Maintenance by users must observe the User's Manual and Service Manual. Any additional maintenance may only be performed by HUVITZ's service technicians or other authorized persons.

6. Manufacturers are responsible for the safety, reliability, and performance of this program only when the following requirements are fulfilled.
   (1) When the program has been installed in a proper PC, following the manual.
   (2) When the program has been operated and maintained according to the manual and service manual.

7. Manufacturers are not responsible for the damages caused by unauthorized alterations. Such tampering will forfeit any rights to receive services during the term of guarantee.

8. Only those who have undergone proper training and instructions are authorized to install, use, operate, and maintain this instrument.

9. Keep the User's Manual and Service Manual in a place easily accessible at all times for persons operating and maintaining the equipment.

10. The program may be impaired if it is used in a manner not specified by the manufacturers or manual.

Recommended Specifications for the Installation

1.1.1 Server

- O/S: Windows 7 or greater (Windows 10 recommended)
- CPU: Intel i5 or greater
- Memory: 4GB or greater (8GB recommended)
- Ethernet: Fast Ethernet (Gigabit Ethernet recommended)

1.1.2 Client

- O/S: Windows 7 or greater (Windows 10 recommended)
- CPU: Intel i5 or greater
- Memory: 4GB or greater (8GB recommended)
- Ethernet: Fast Ethernet (Gigabit Ethernet recommended)
- Browser: Chrome (recommended), IE 11 or greater

Classification

- Classification of product: Class IIa according to Annex IX (Rule 11) of the Medical Device Regulation 2017/745.
- Resistance against electric shock: Not applicable.
- Protection class against electric: Not applicable .
- This device is medical device.

Symbol Information

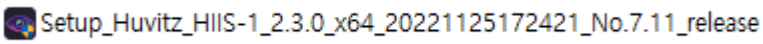
Symbol	Indication
CE 0197	CE Mark (Marque CE)
EC REP	Authorized representative in the European Community – EU ONLY (Représentant autorisé dans la Communauté européenne-EU seulement)
CH REP	Authorized representative in Switzerland (Représentant autorisé dans la Suisse)

2

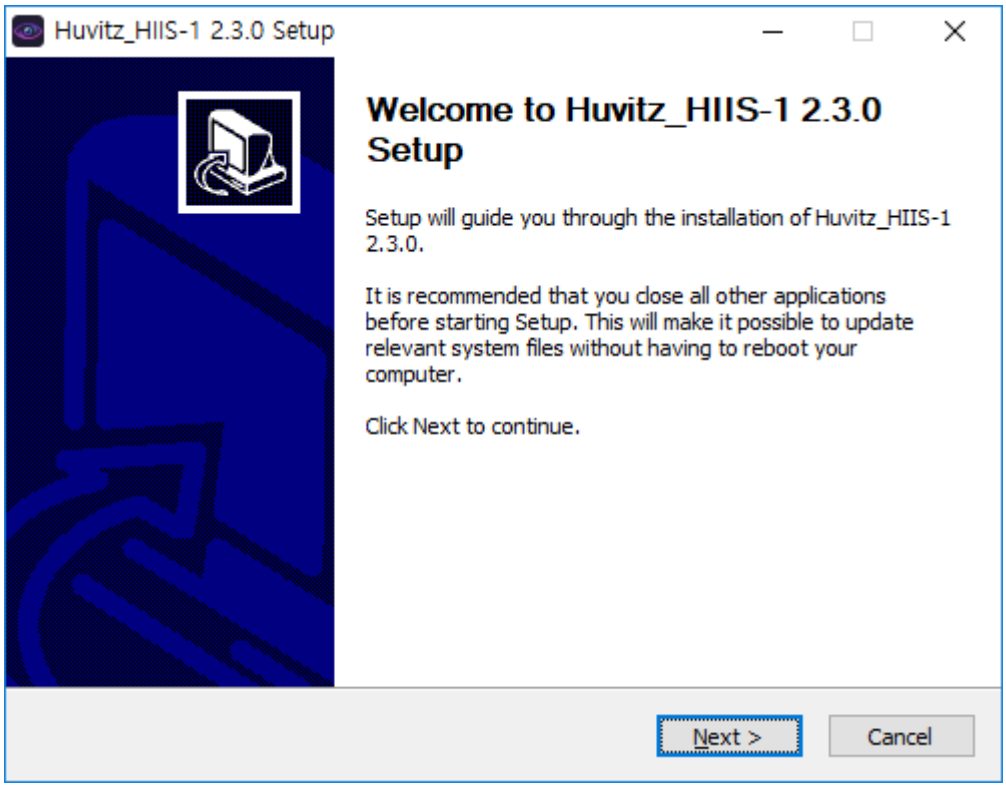
2 Installer Installation

New Installation

1 Execute Setup_Huvitz_HIIS-1_X.X.X_x64_XXX_No.X.XX_release.exe Installer.

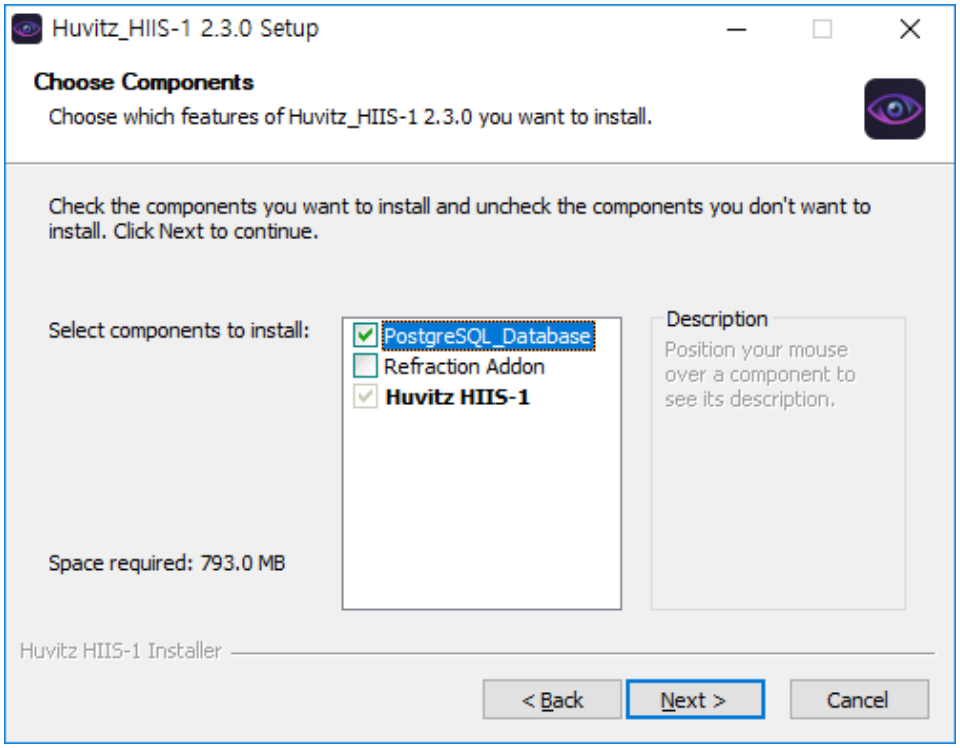


2 Start installation. Press on the Next button.

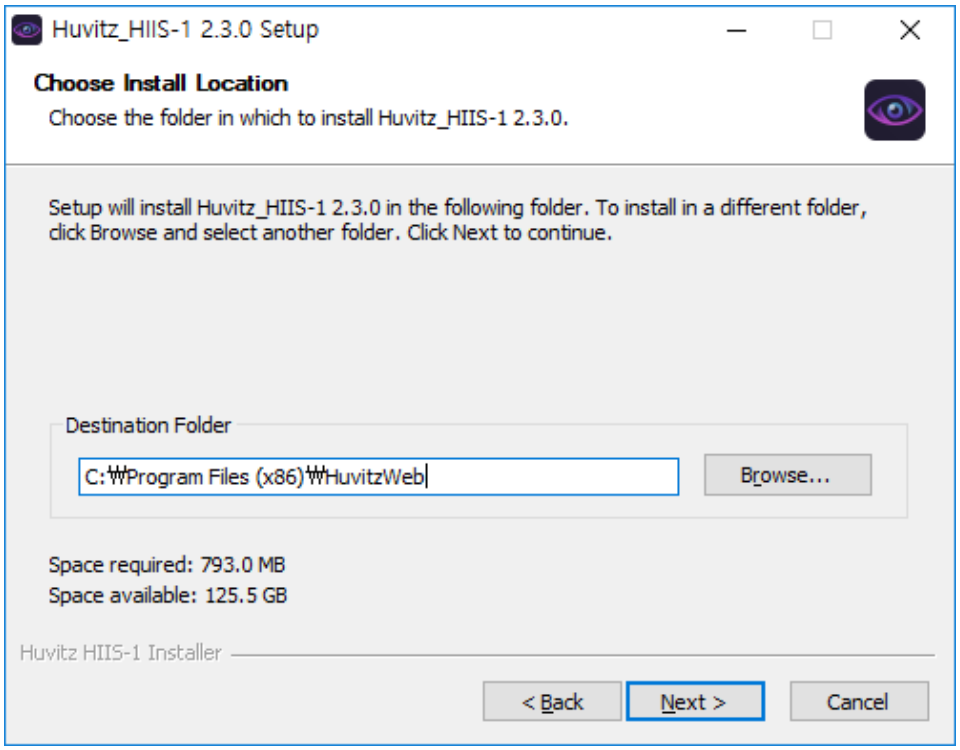


3 Select the component to install. In case of new installation, select both 'PostgreSQL_Database' and 'Huvitz HIIS-1'.

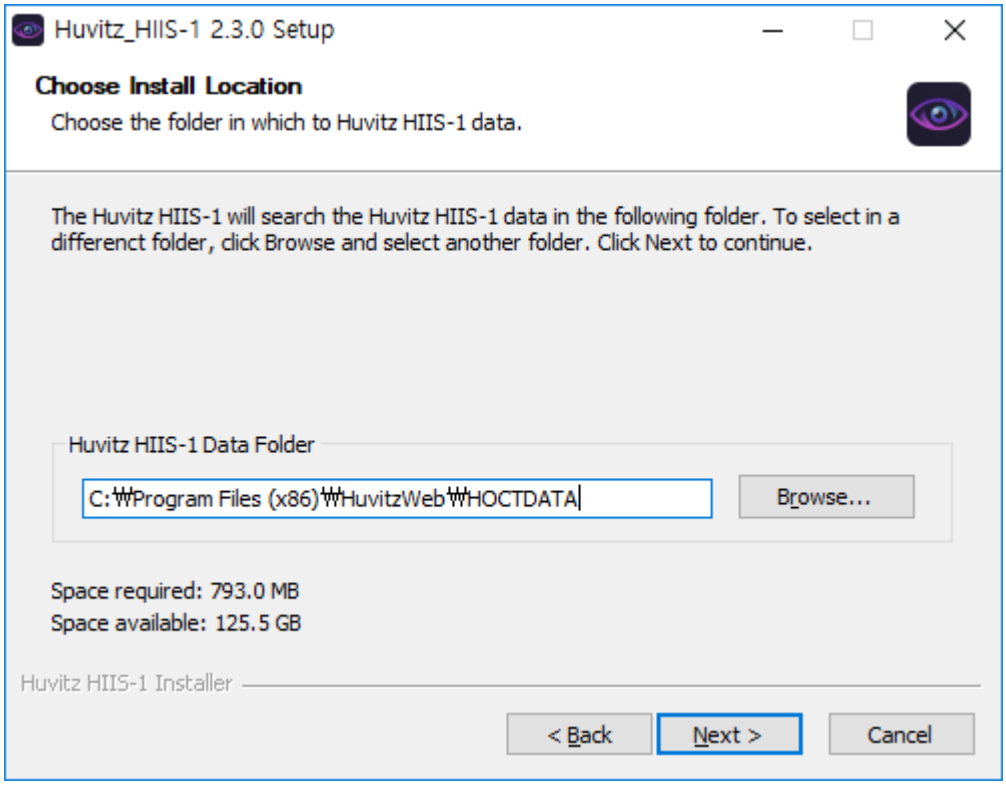
If it is not a new installation, uncheck the 'PostgreSQL_Database' item.



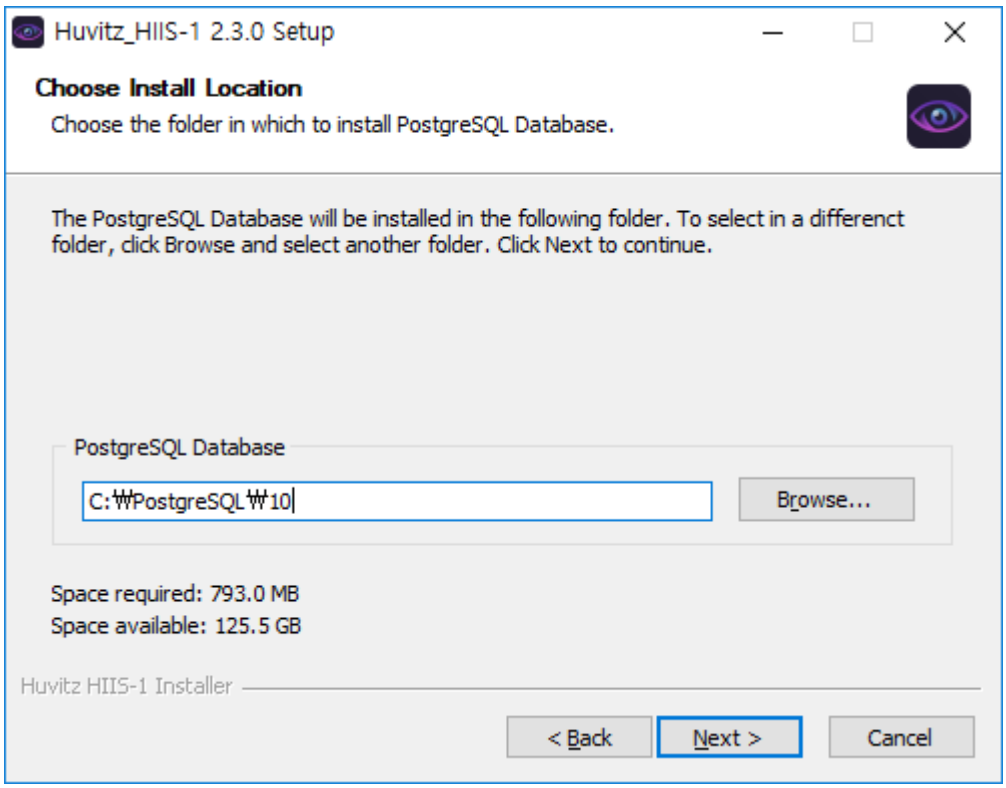
4 Designate the path to install the program. Use the default value.



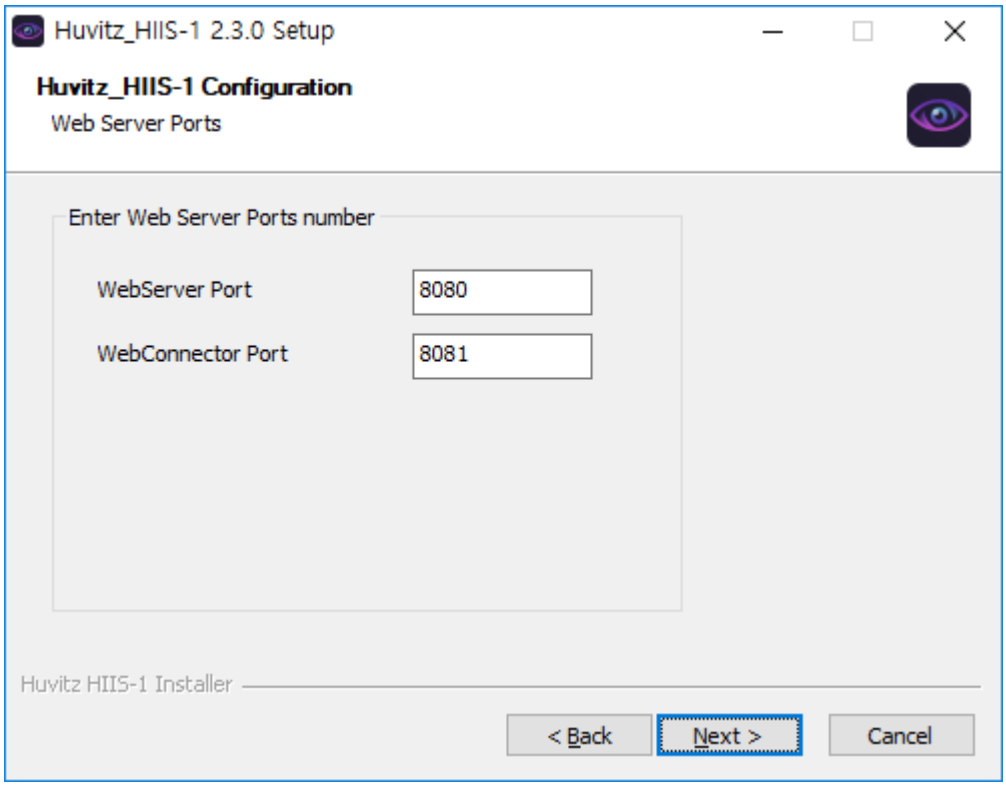
5 Designate the path to save the patient data. Since the size of image data is large (5~25MB by each measurement), save on the disc with sufficient available space.



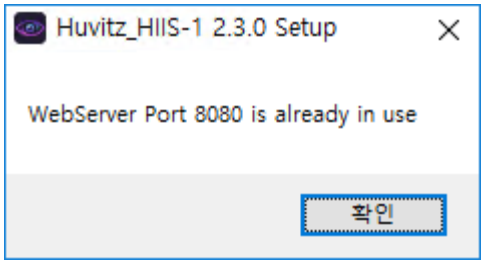
6 Designate the path to install the program for the PostgreSQL database.



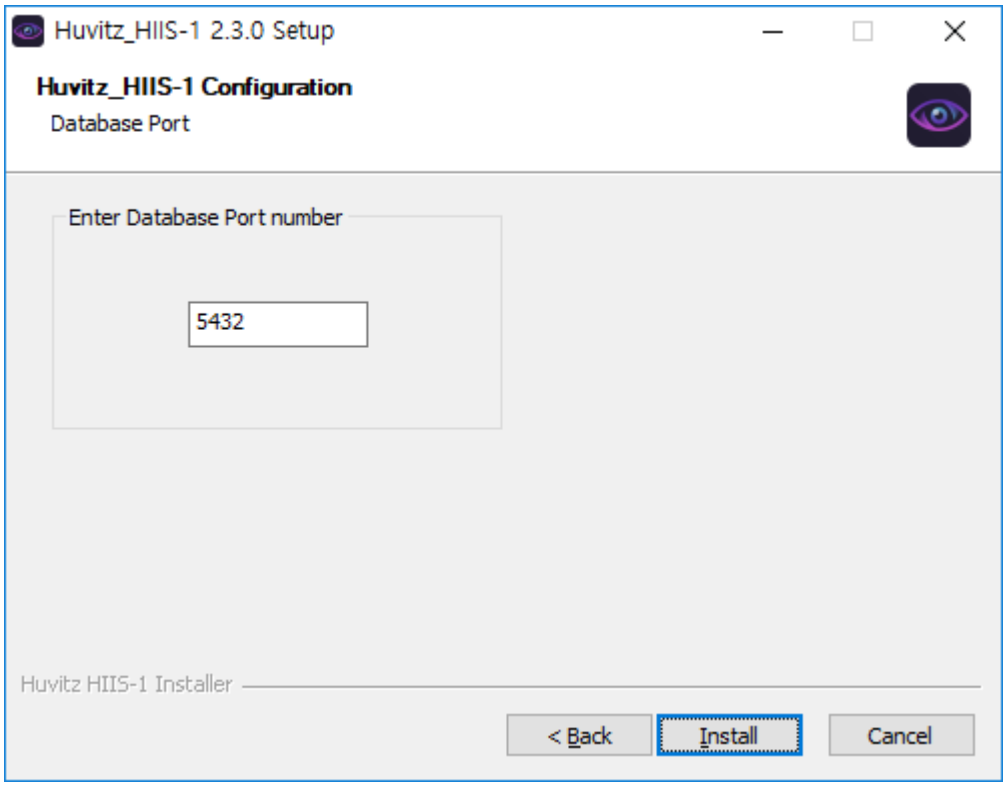
7 Designates the port number to be used in the HIIS-1. Make sure to remember this port number since it is the number that is used when contacting from the personal PC via Web browser. For instance, when port number, set during this stage is 8080 and when the address of the installed server is http://192.168.1.3 is assumed, HIIS-1's contact address becomes http://192.168.1.3:8080. WebConnector is the internal server that is provided so that the HIIS-1 can divide its work. Since this port number is used for the communication among servers, user does not need to remember. When two port numbers overlap, server does not work. Thus, it is necessary to set so that the port numbers do not overlap. Screen of the next stage gets output when the port numbers overlap.



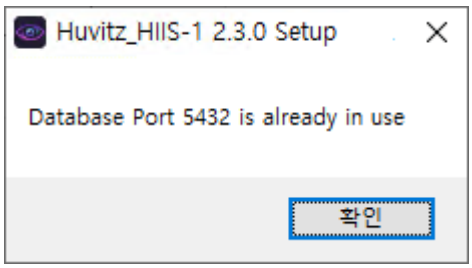
8 The following error message gets output when the port number is already being used by other program. Other port number can be used, but must remember the input port number.



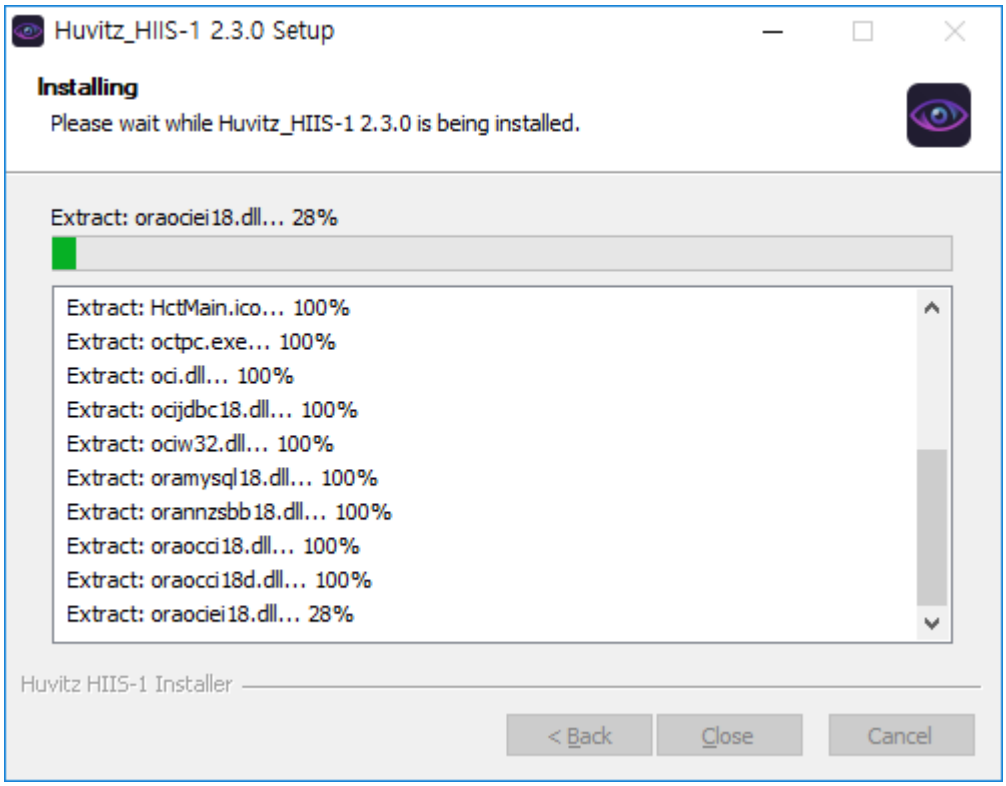
9 Designates port number to use in the PostgreSQL database. Use default value if possible since the port number is the number used by the system internally. There is no need to remember this port number.



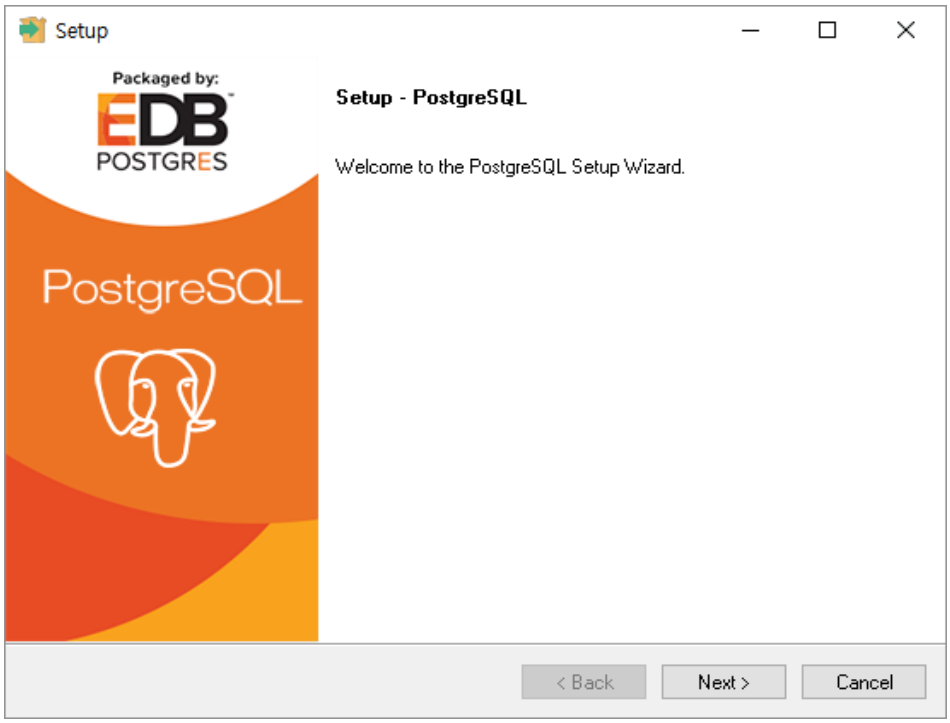
10 Error message gets output when the number that is the same as the HIIS-1's port number is already in use. Set to another number when the following message appears.



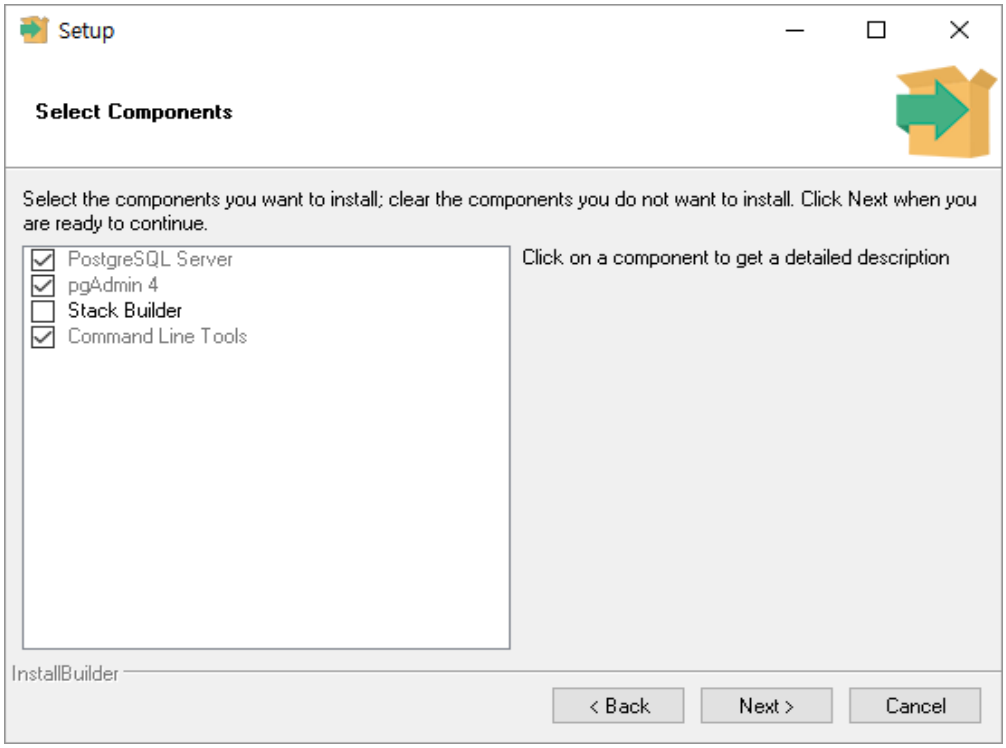
11 Displays installation progress.



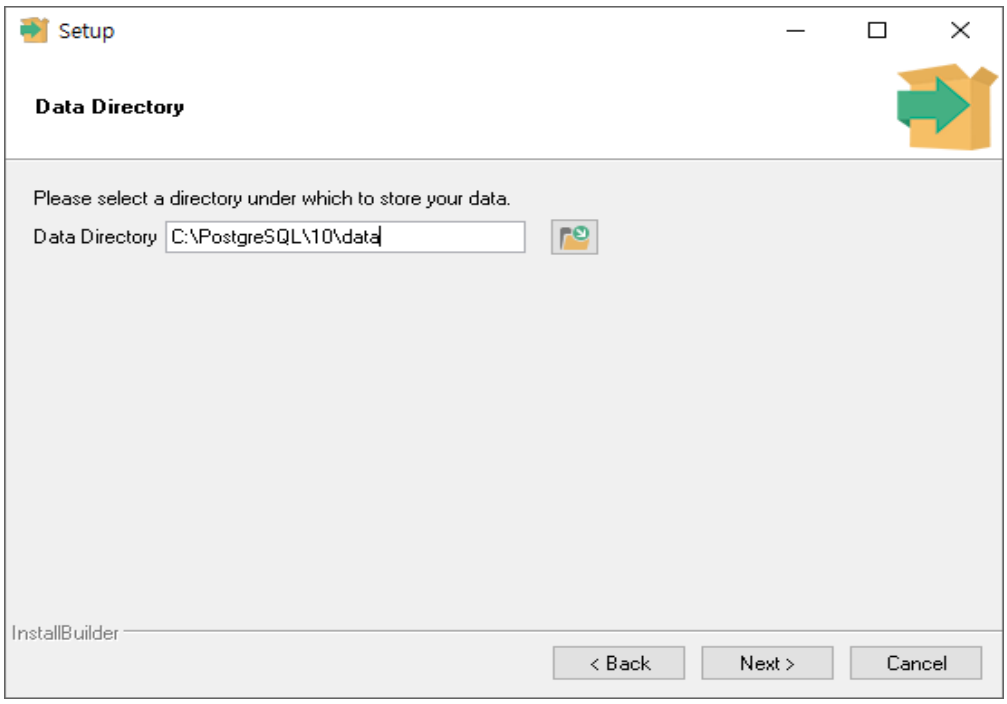
12 Install PostgreSQL database Start mid-way. Click on the Next button.



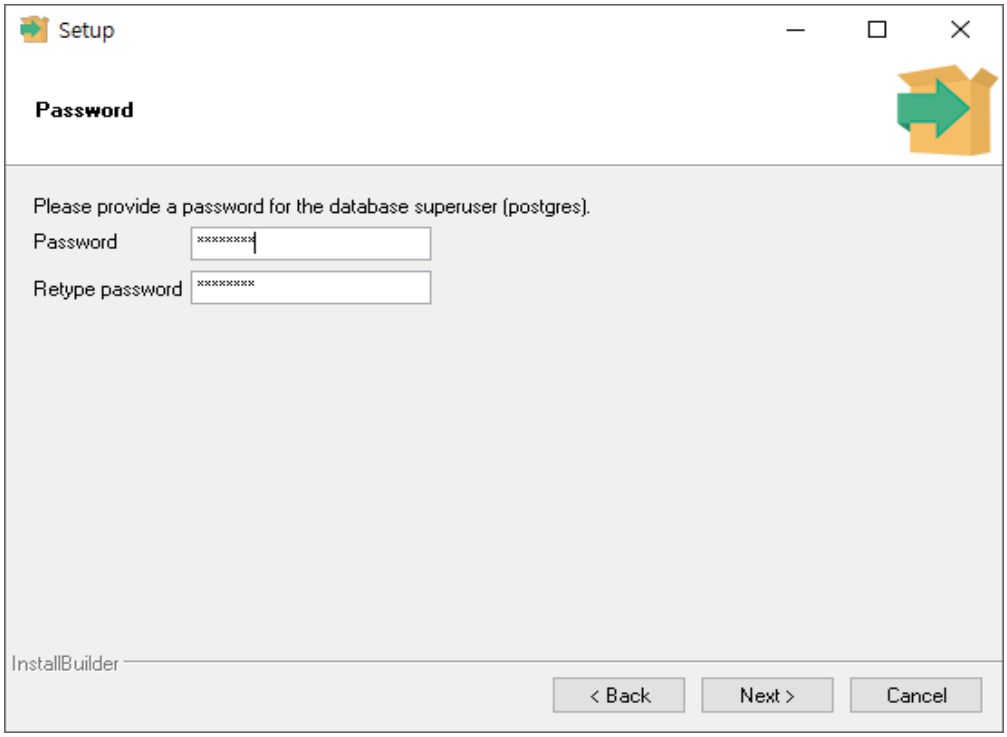
13 Do not modify default value and continue to click on the Next. May malfunction when the default value is modified.



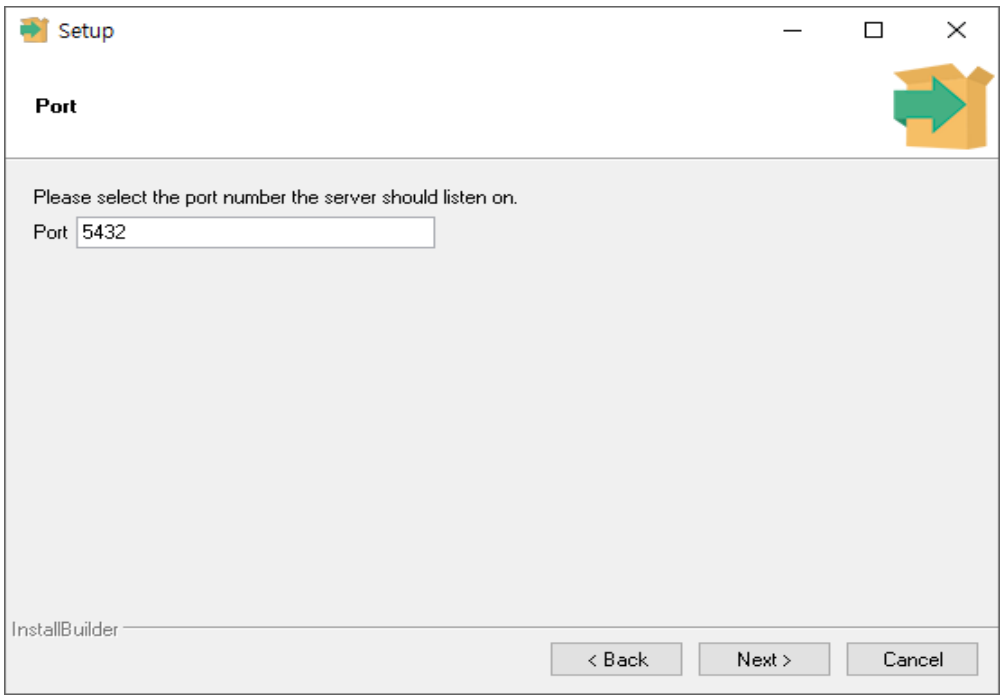
14 Designates PostgreSQL database installation path. Continue to click on the Next button.



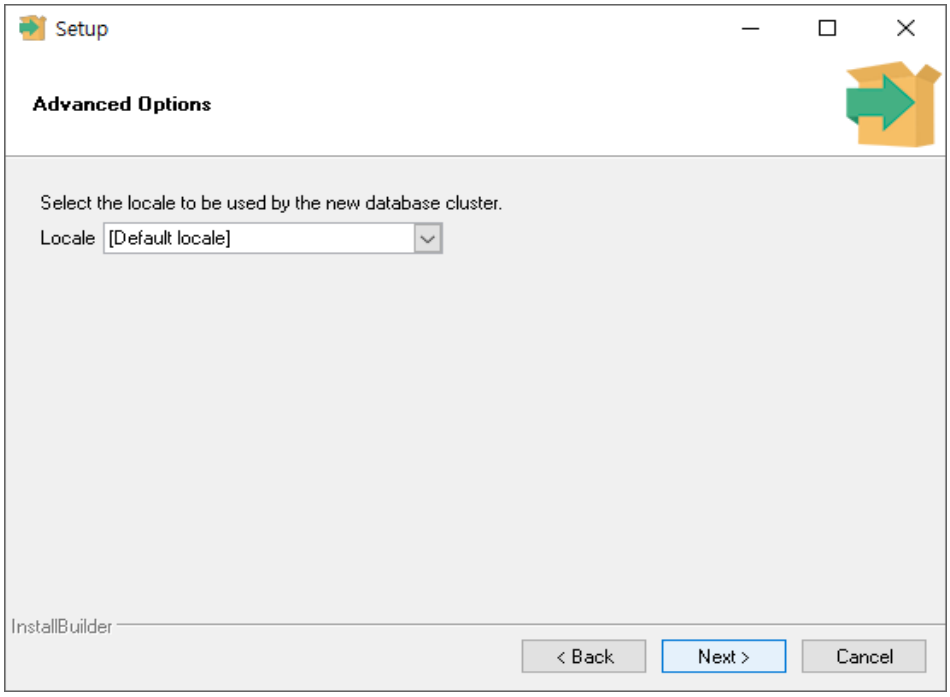
15 Designates PostgreSQL administrator password. Do not modify since it is used in the system internally. Continue to click on the Next button.



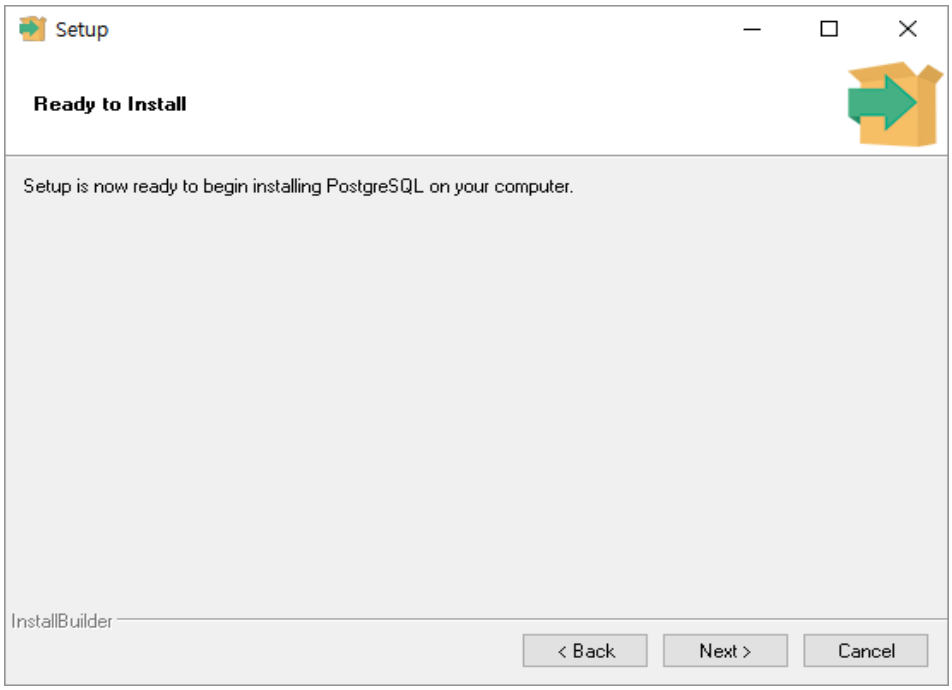
16 Previously set port number is designated automatically. Do not modify and continue to click on the Next button.



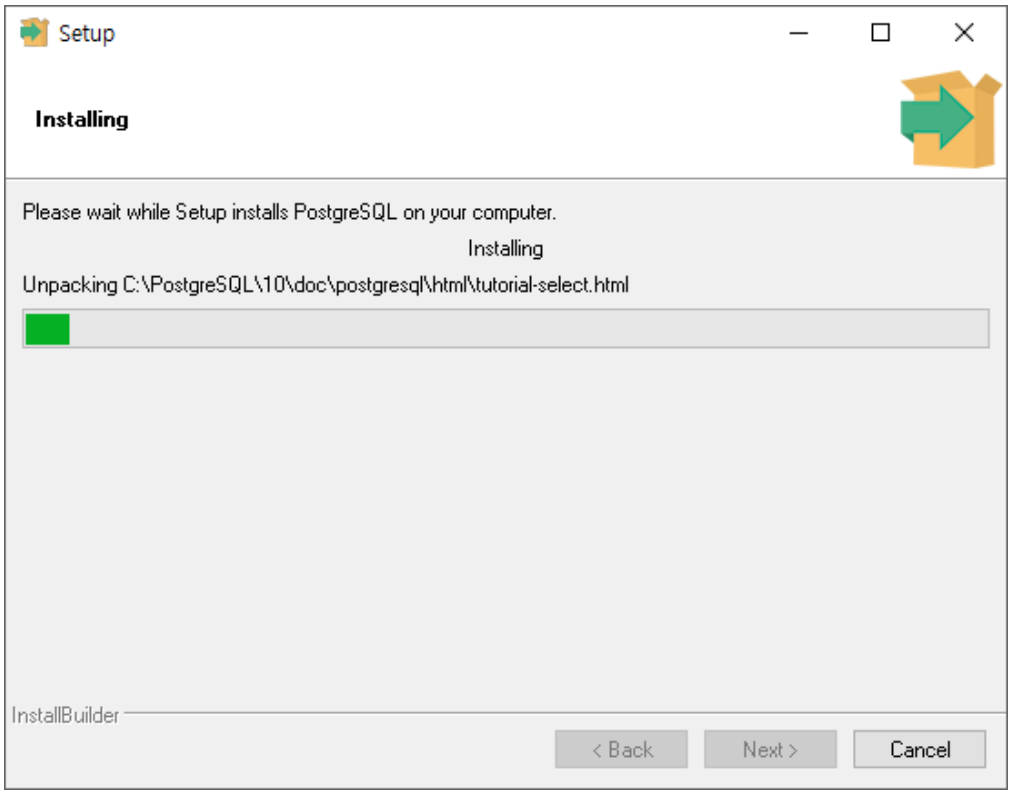
17 Sets up the PostgreSQL database language. Continue to click on the Next button since it is possible to use default value.



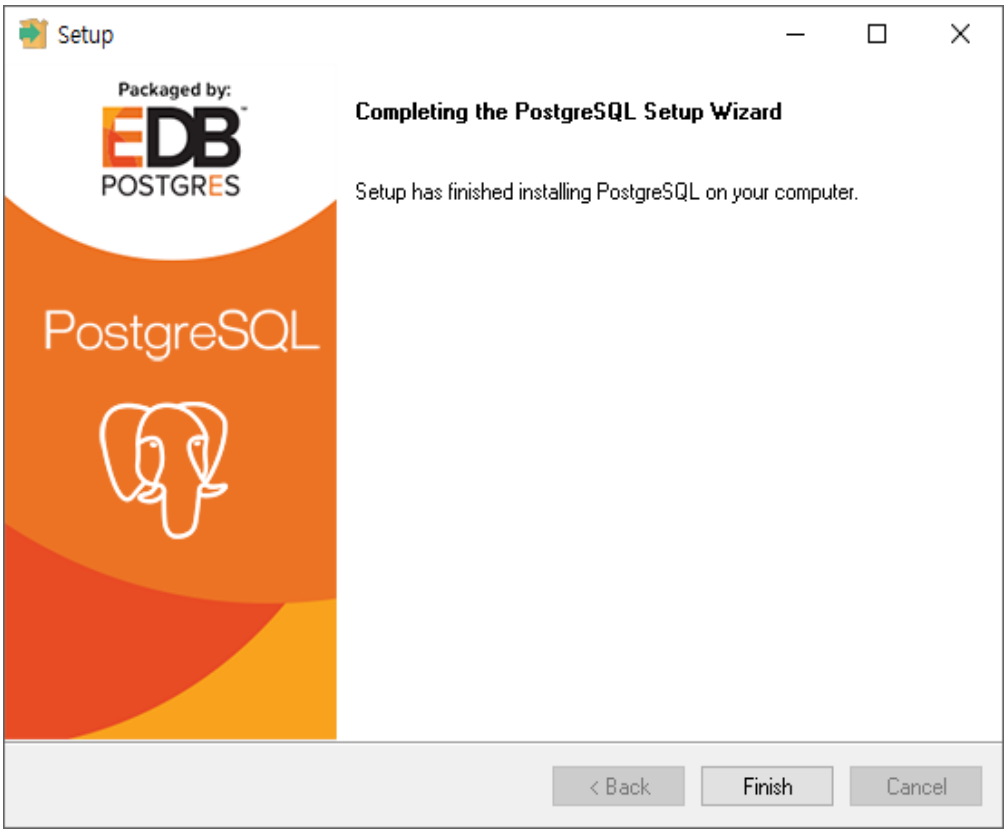
18 Continue to click on the Next button.



19 Installation is executed. Wait for a moment.

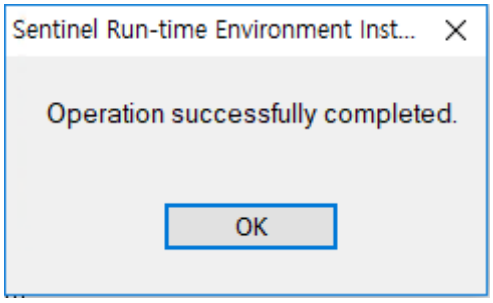


20 PostgreSQL database installation is completed. Click on the Finish.

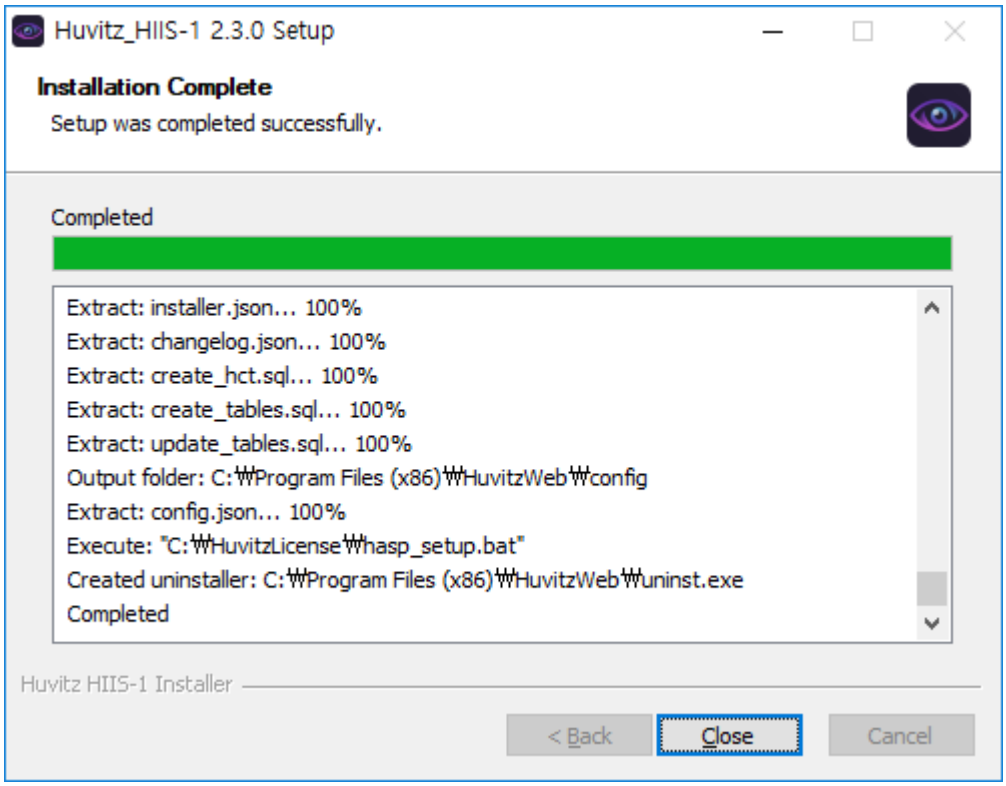


21 When the black screen appears as follows, do not close the window. Instead, wait and it will close automatically. Since database initialization is in progress, it does not operate normally when it is closed mid-way.

When the next window pops up, click the “Ok” button.



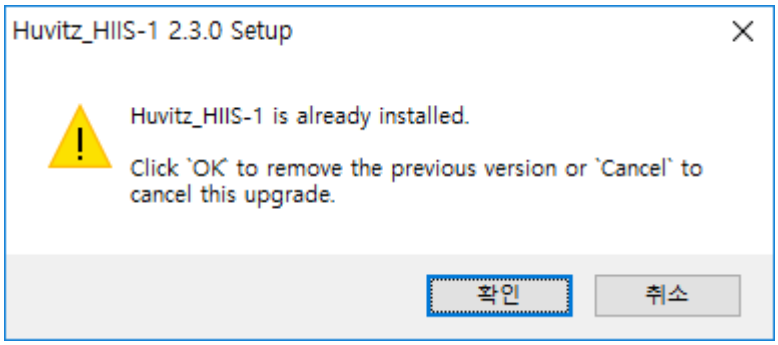
22 HIIS-1 installation is completed.



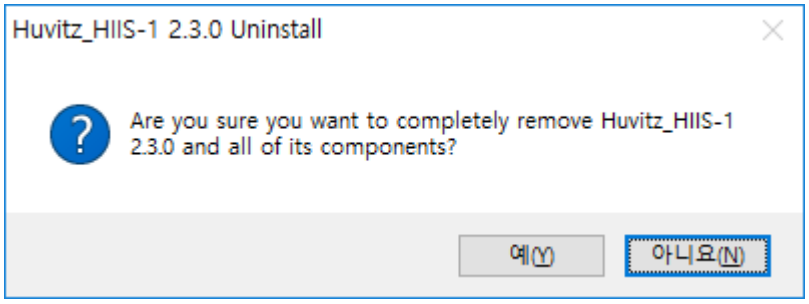
Version Upgrade

To upgrade version, re-install after removing the installed HIIS-1 program.
Uninstallation of installed version will automatically start when the upgrade version of HIIS-1 installer starts.

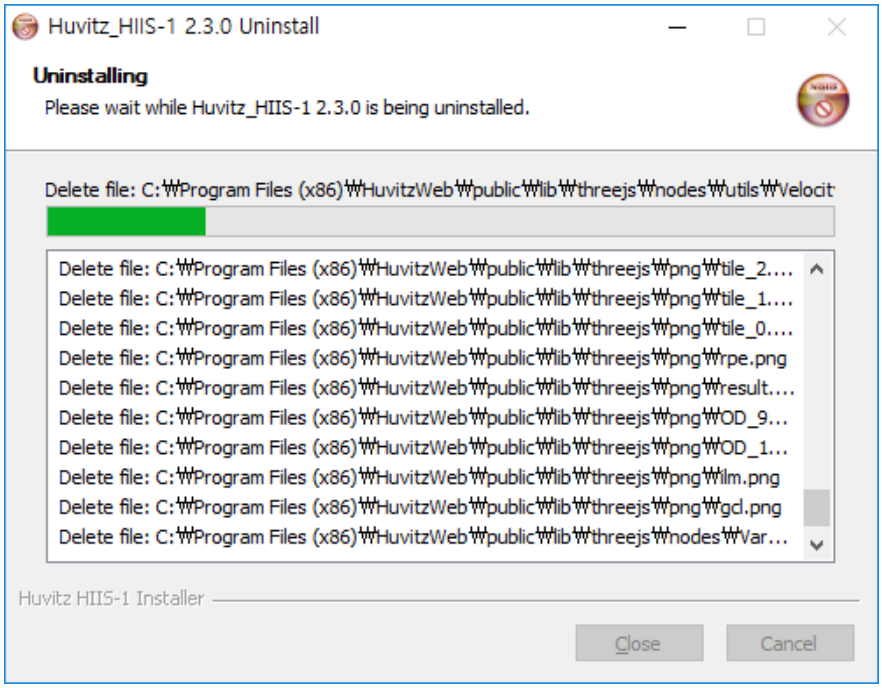
1. To remove installed version, please click ‘OK’ button.



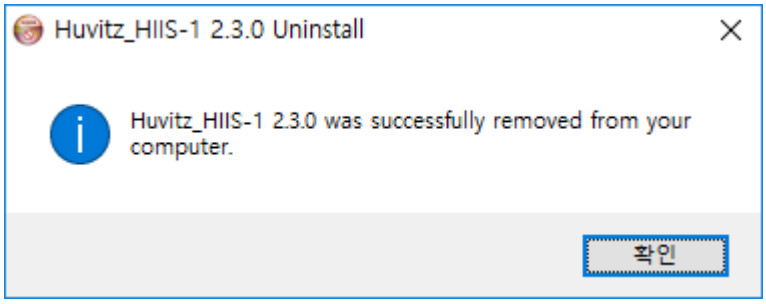
2. Confirm the installed version, and click ‘Yes’ to start uninstallation.



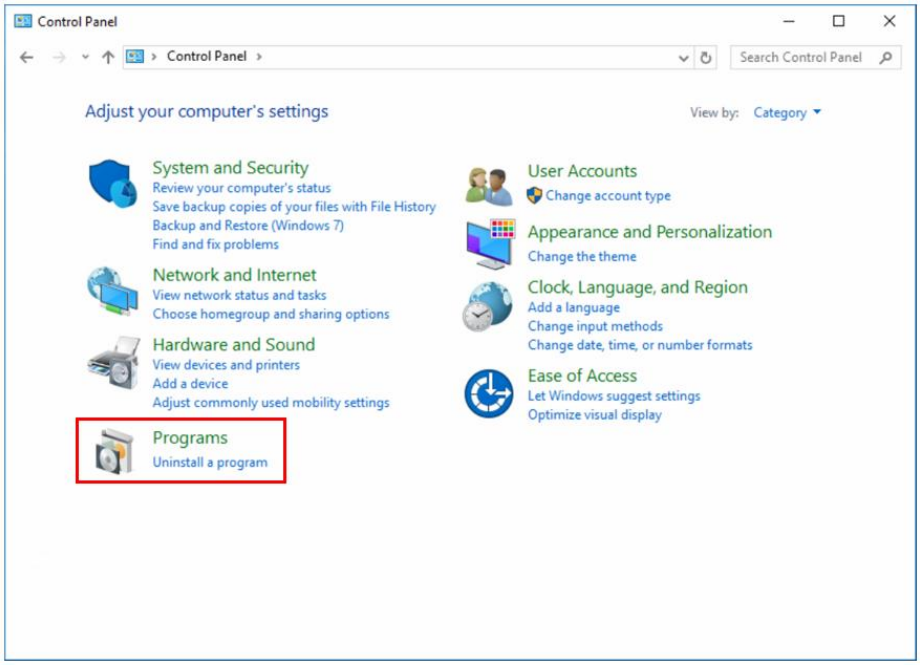
3. Removal in progress.



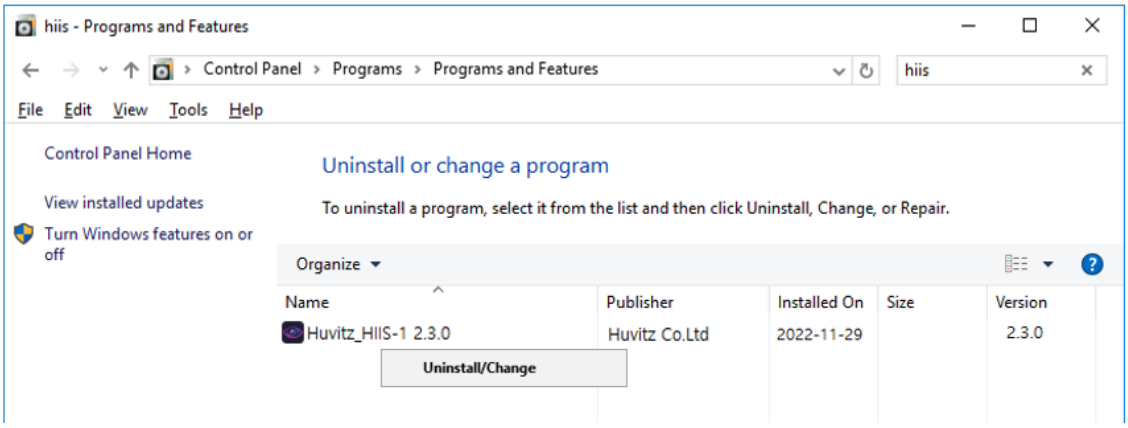
4. Uninstallation is completed



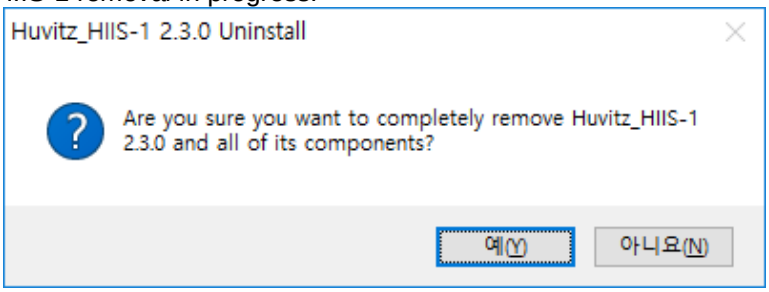
5. Remove installed version manually by following instructions if the installed version is not deleted automatically.
Execute Window control panel and select ‘remove program’.

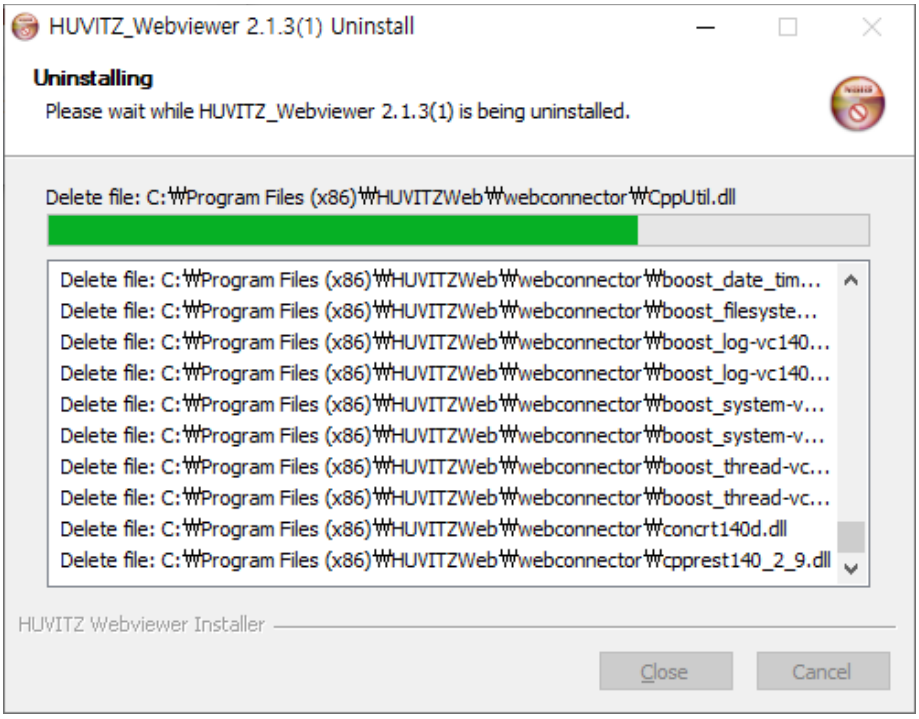


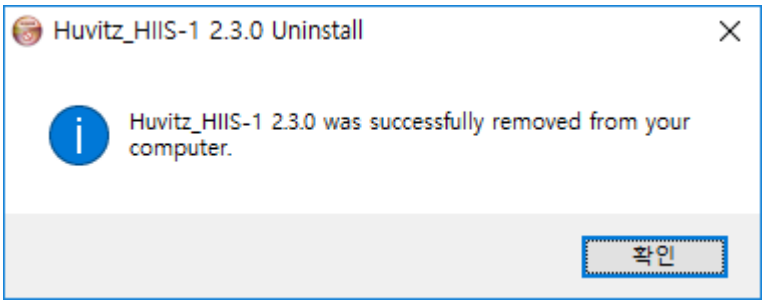
6. Select HIIS-1 and execute ‘remove’.



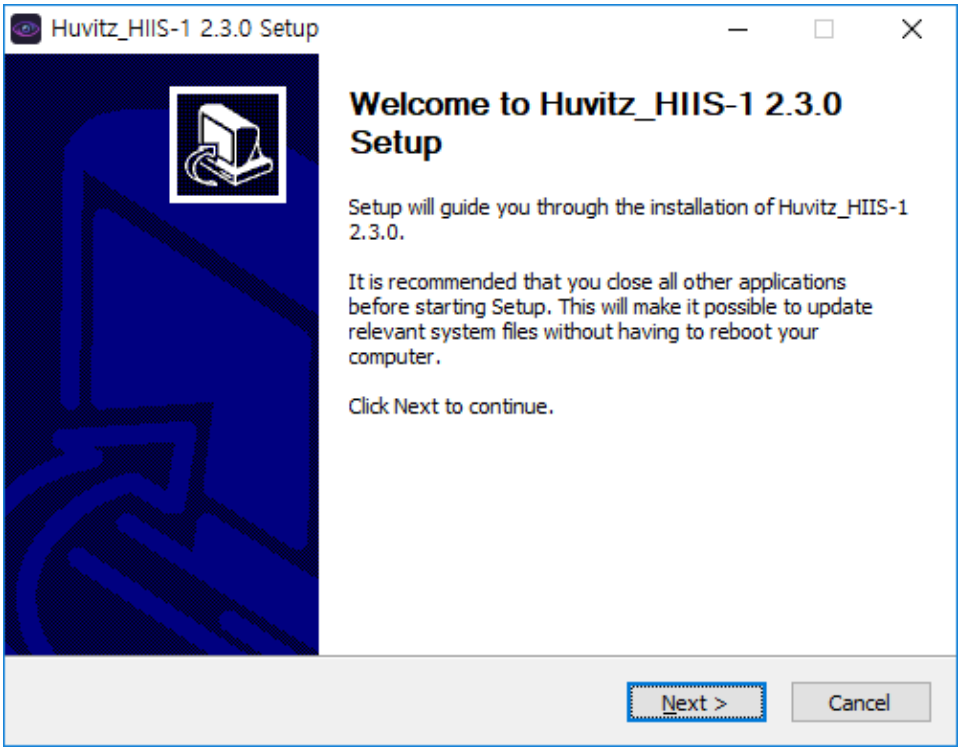
7. HIIS-1 removal in progress.



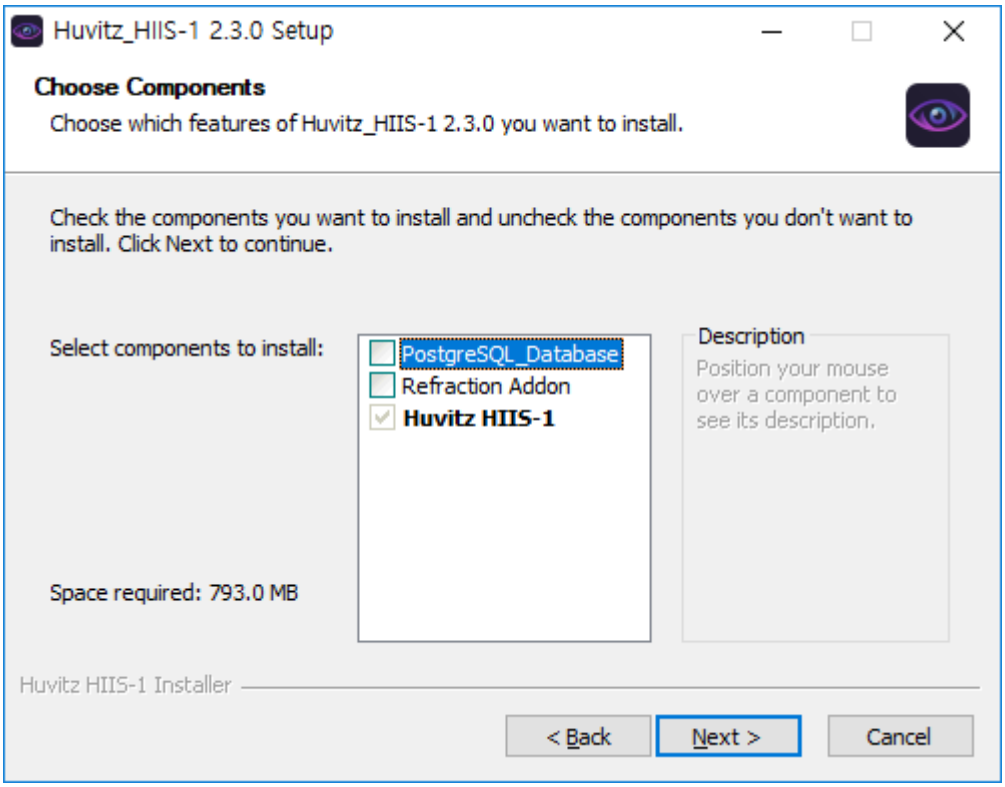




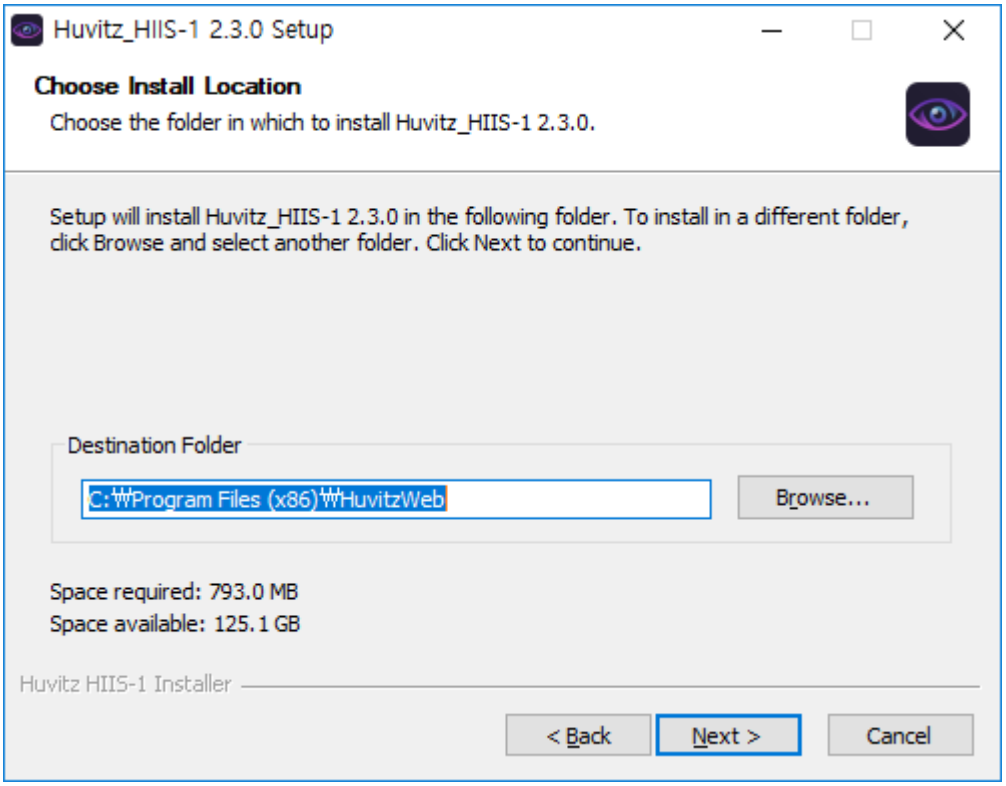
8. Press on the Next button after executing new version Installer.



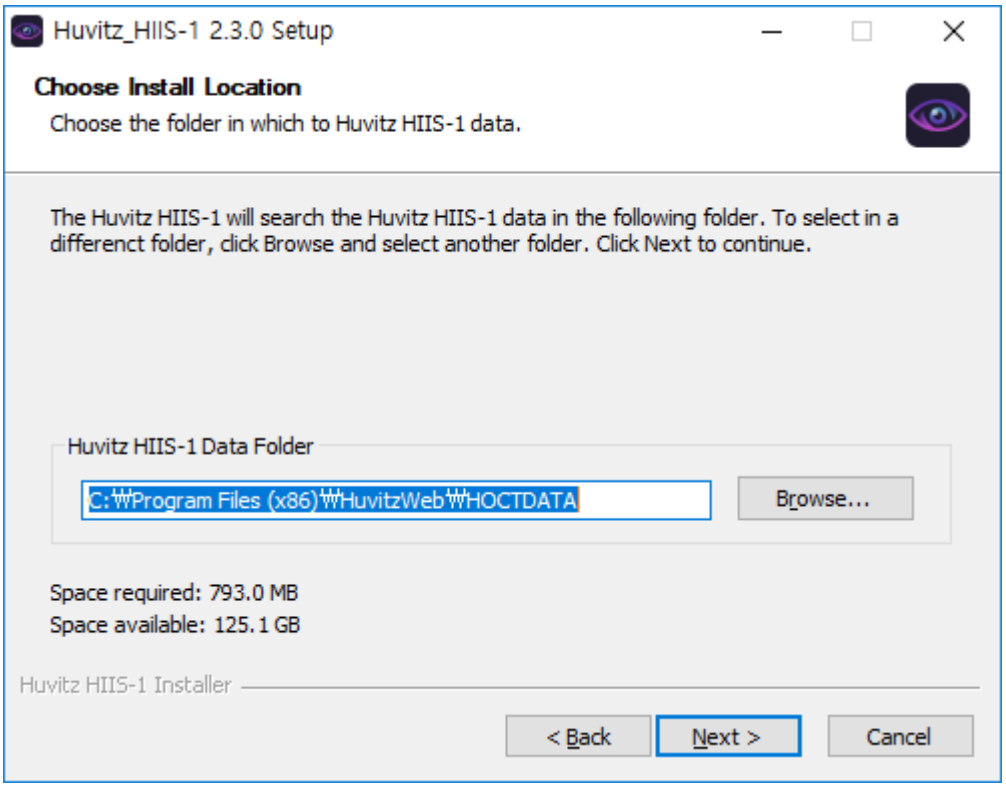
9. This the process for upgrading version.
Thus, press on the Next button after clearing selection in case of PostgreSQL_Database installation.



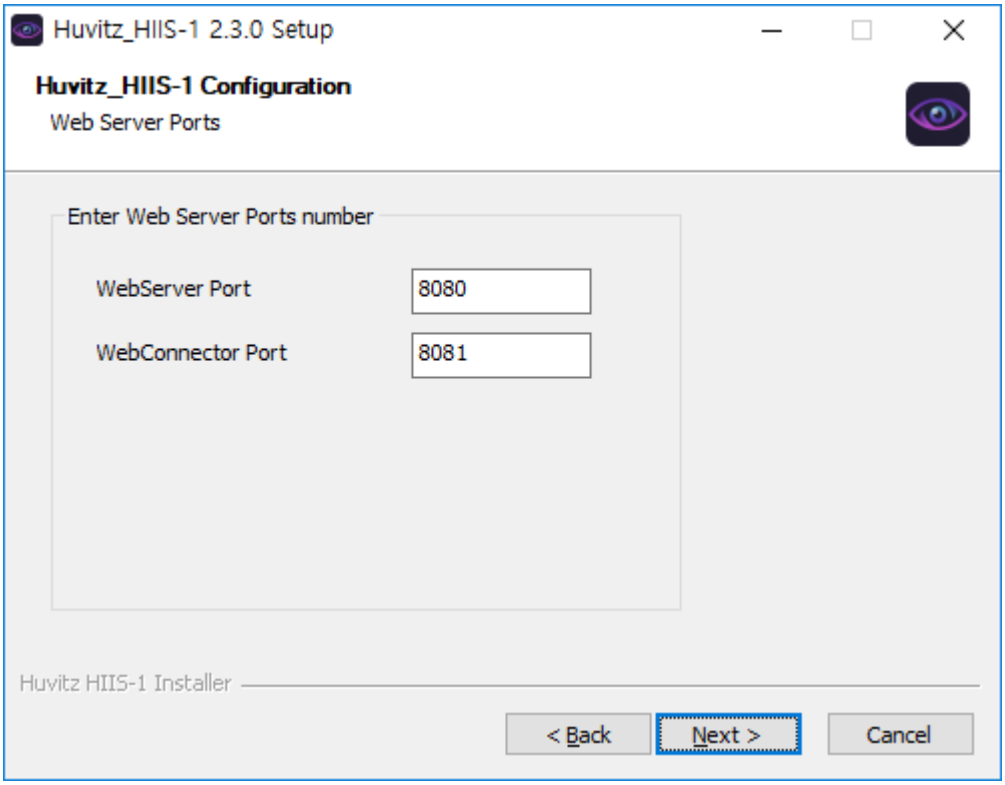
10. Designates path to install the program.



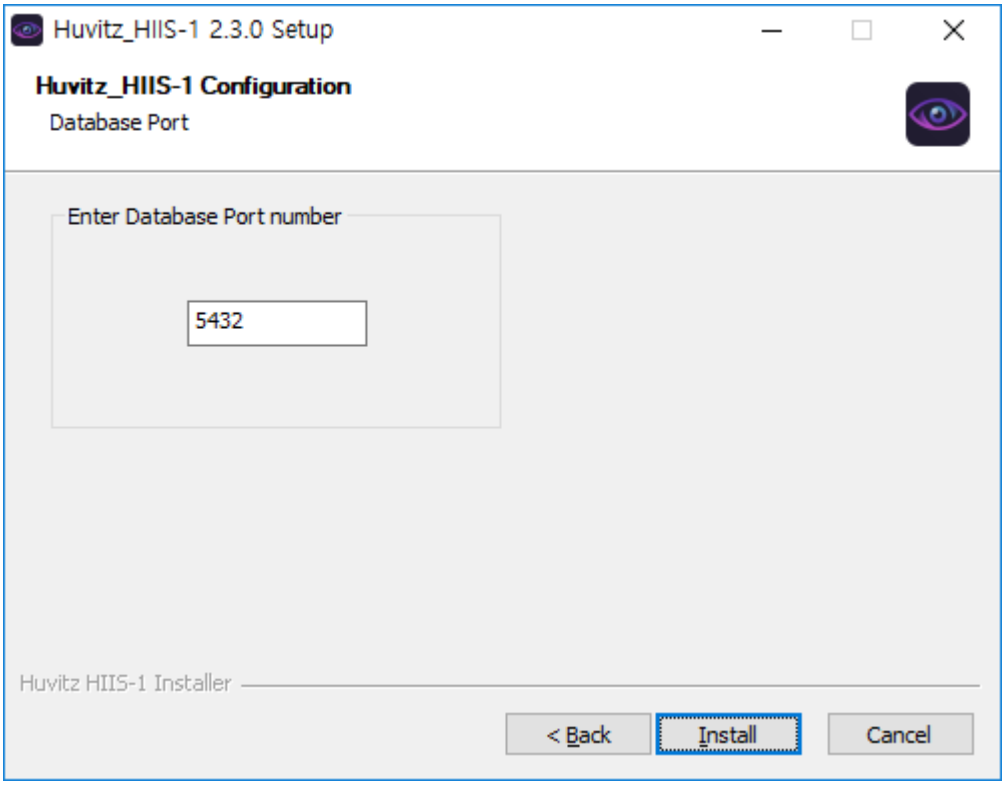
11. Designates path to save HIIS-1 data.
Designates the path that was set as it is since previous data needs to be used as is.



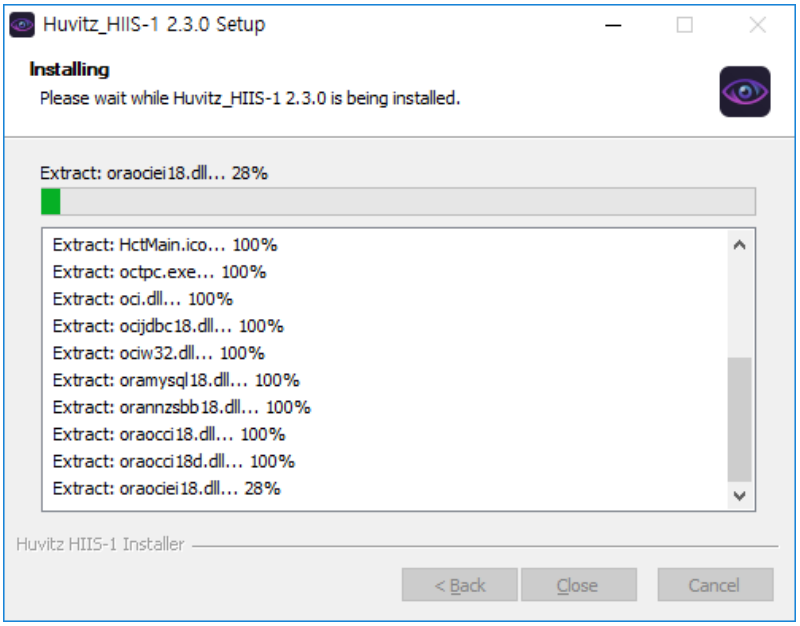
12. Designates the port number to use in the HIIS-1.
    Remember this port number since is the number that needs to be used when contacting HIIS-1 server



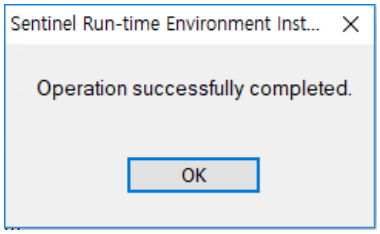
13. Designates the port that is used in the installed PostgreSQL program.



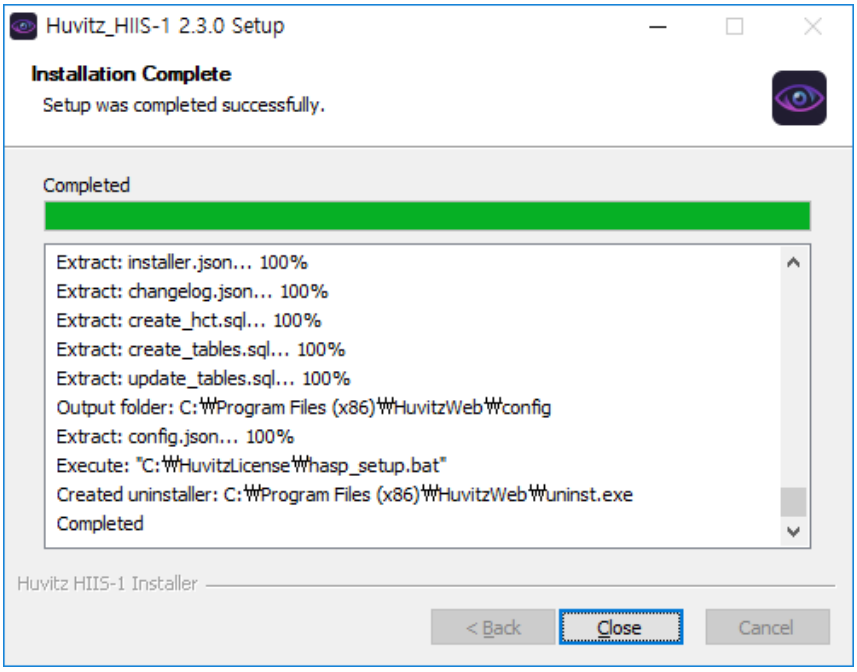
14. HIIS-1 installation is in progress.



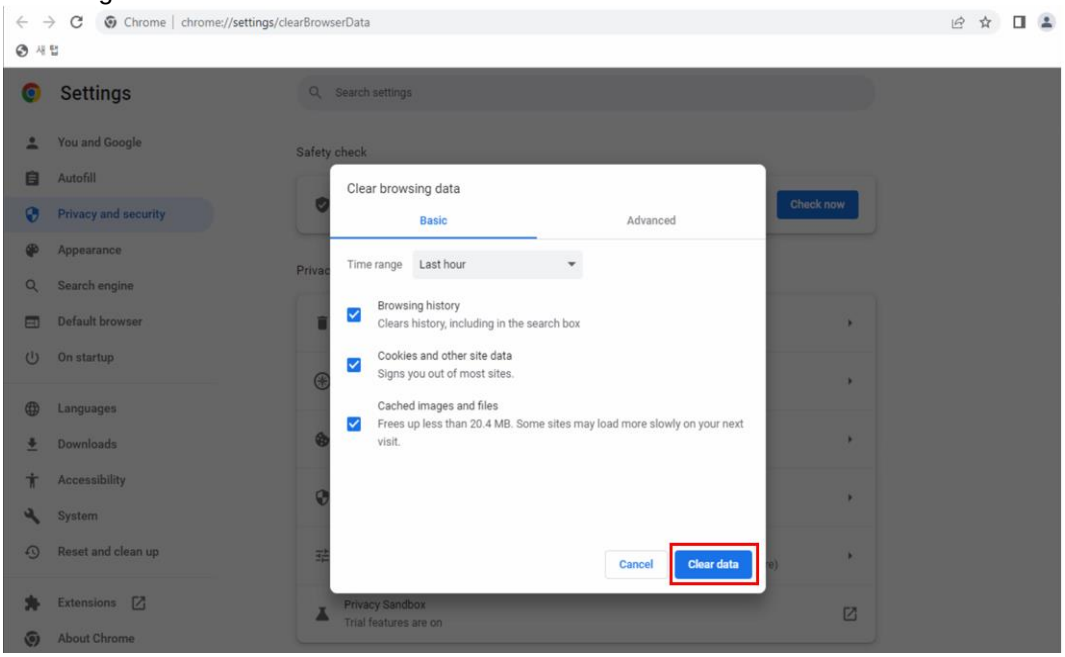
Click the “Ok” button that pops up next.



15. HIIS-1 upgrade is completed.



◆ Cache data of the previous version remains in the Web browser. Thus, there are instances in which screen does not appear properly on the Web browser after upgrading. In this case, open setting with Ctrl + Shift + Del button, delete all the Internet use records as follows and contact again.

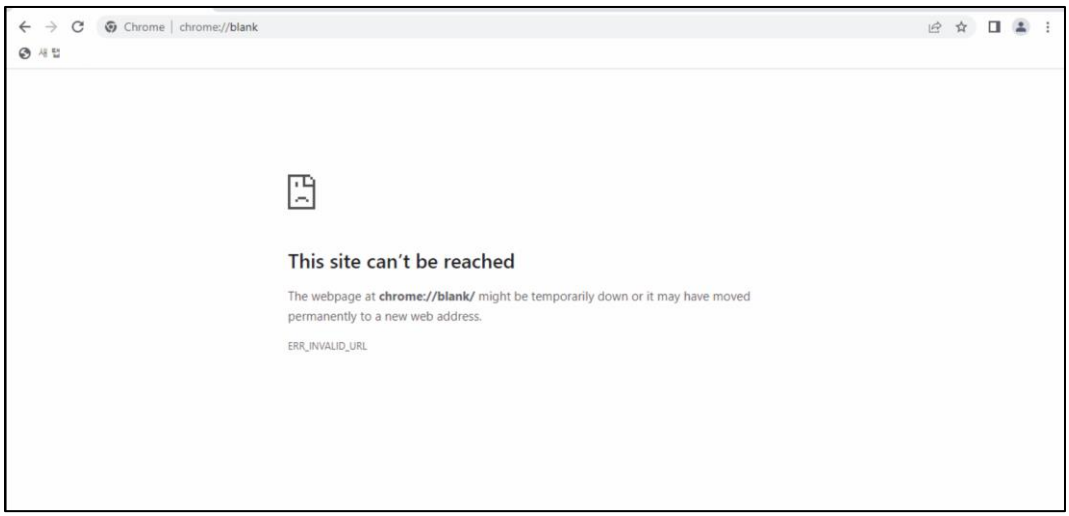


3

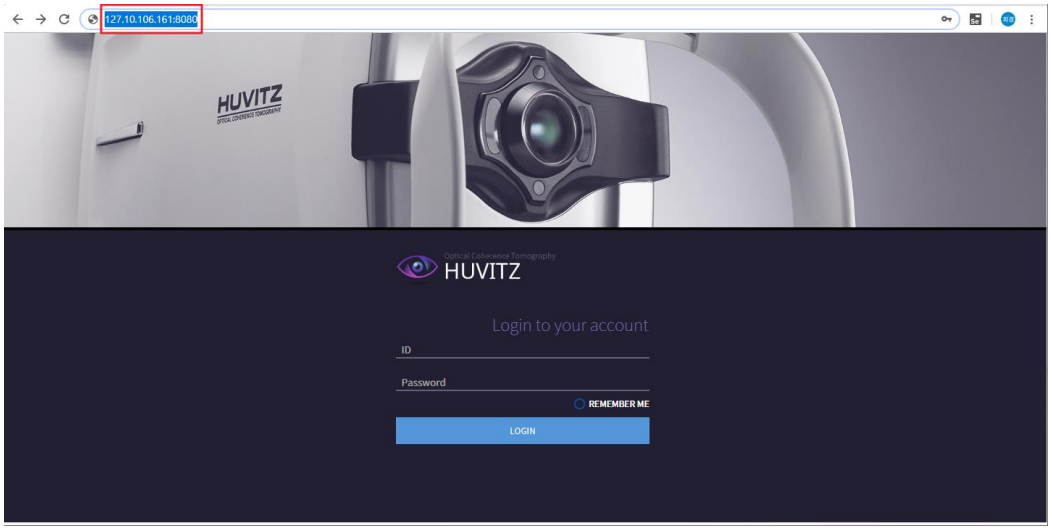
3 Screen Description

Access Screen

1 Execute Web browser. (As for the types of Web browser, there are Internet Explorer and Chrome. However, Huvitz Integrated Image Server, HIIS-1 (hereafter, HIIS-1) is optimized for the Chrome browser. When using other Web browser, there may be functions that do not work since Web browser does not support those functions.)

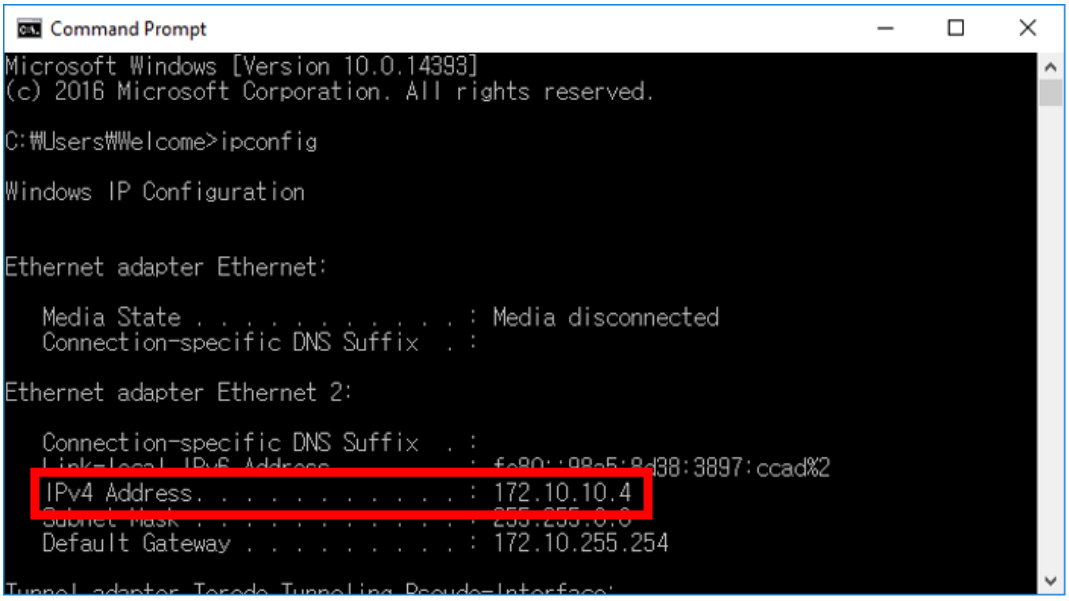


2 Input address and port number where the HIIS-1 is installed in the Web browser's address input space (①). In the example, address is 172.10.106.161 and the port number is 8080. If the PC in use is HIIS-1 server, then it is possible to input as localhost:8080 or 127.0.0.1:8080.

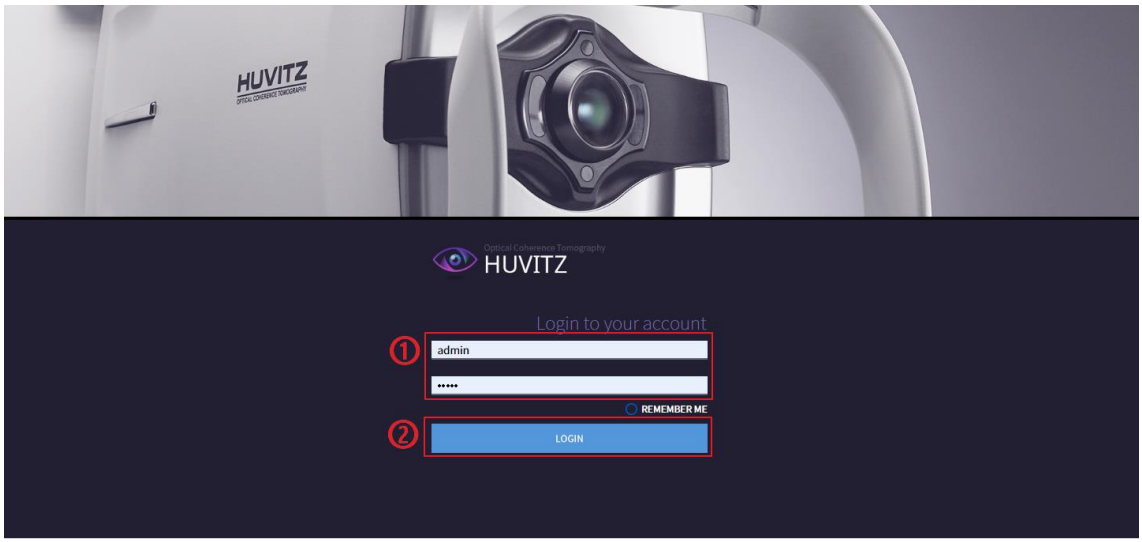


◆ Method for finding out HIIS-1's server address

1. Execute command screen in the computer where HIIS-1 server is installed.
   (input 'cmd' after clicking on the task bar's Window button)
2. Input 'ipconfig'. IPv4 address on the result screen is the Web server's address.



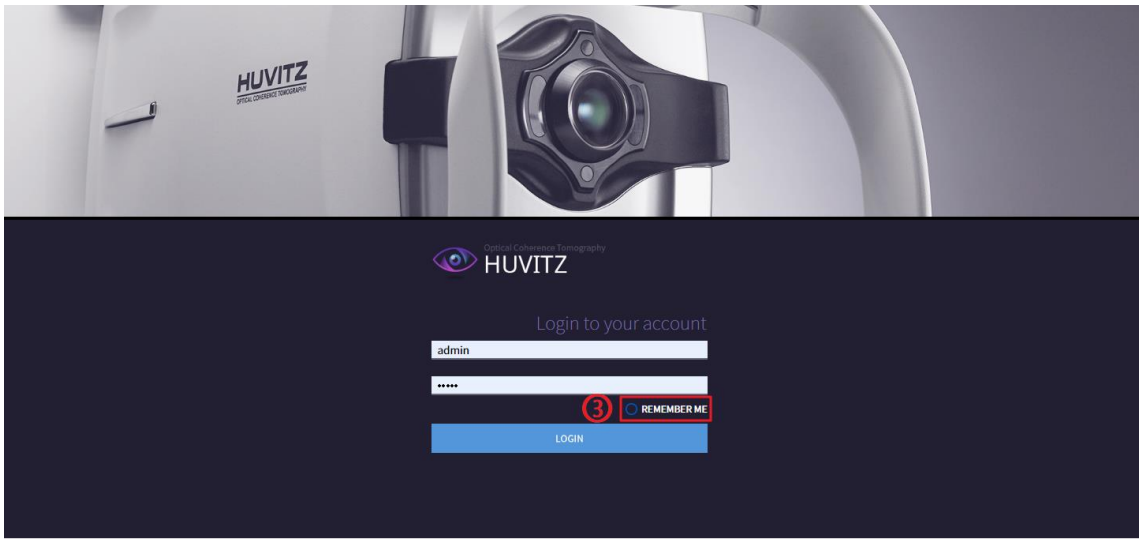
Log-in Screen



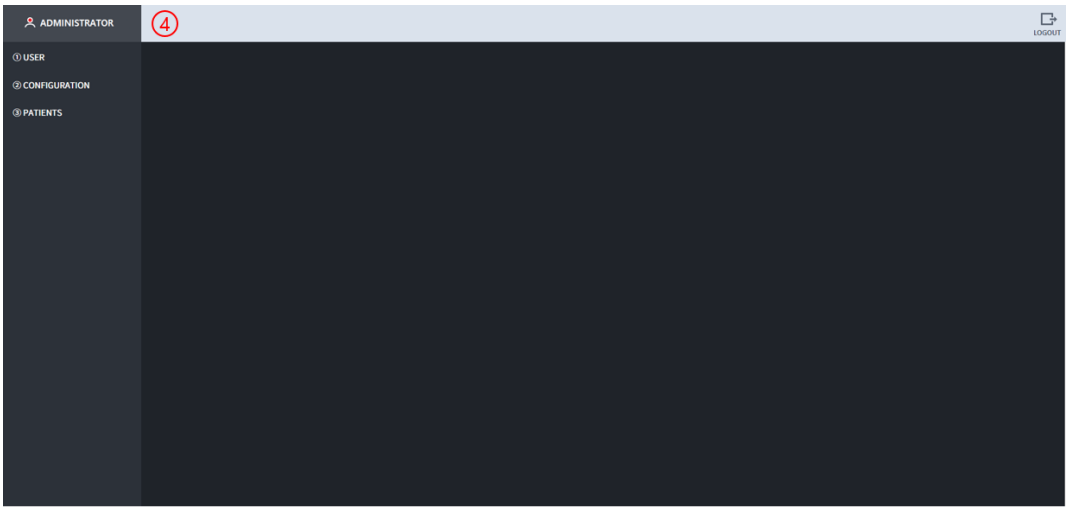
1 Input user's ID and password in the ID/Password input space used for logging-in. Administrator's ID and Password that are used for logging-in after the first installation are admin / admin.

2 Click on the LOGIN button.

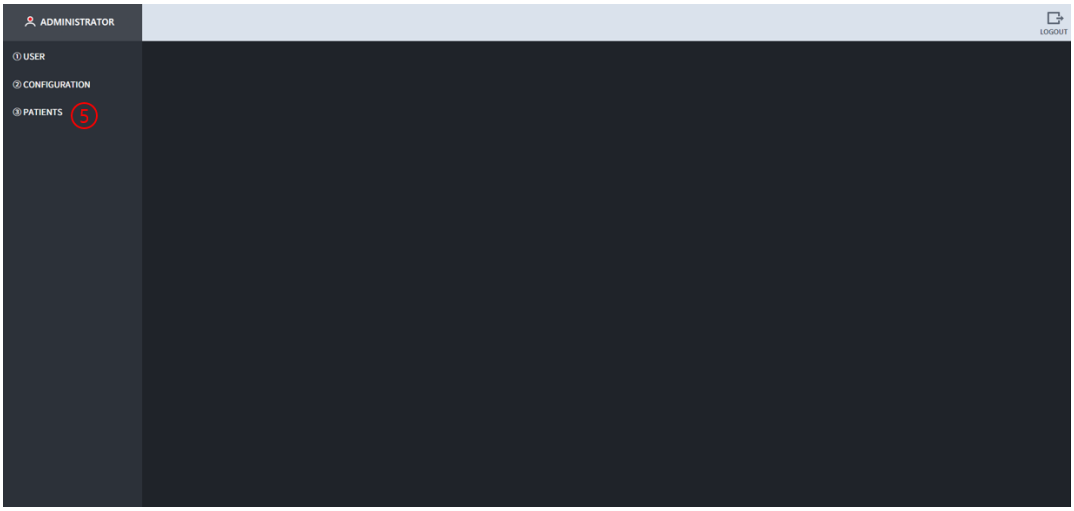
3 Check "REMEMBER ME" to log-in automatically when the Web browser is executed next time.



4 The following type of administrator page is shown first when logging-in as administrator instead of regular user. Use after creating regular user ID. Ensure that only the user that manages the system can access the system.



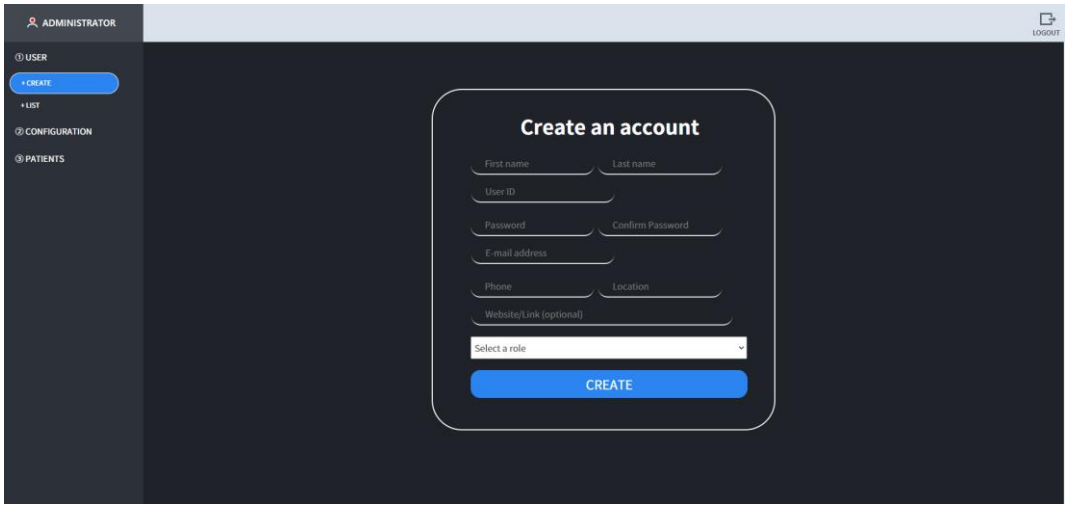
5 Moves to the patient information screen when ‘PATIENTS’ is clicked on.



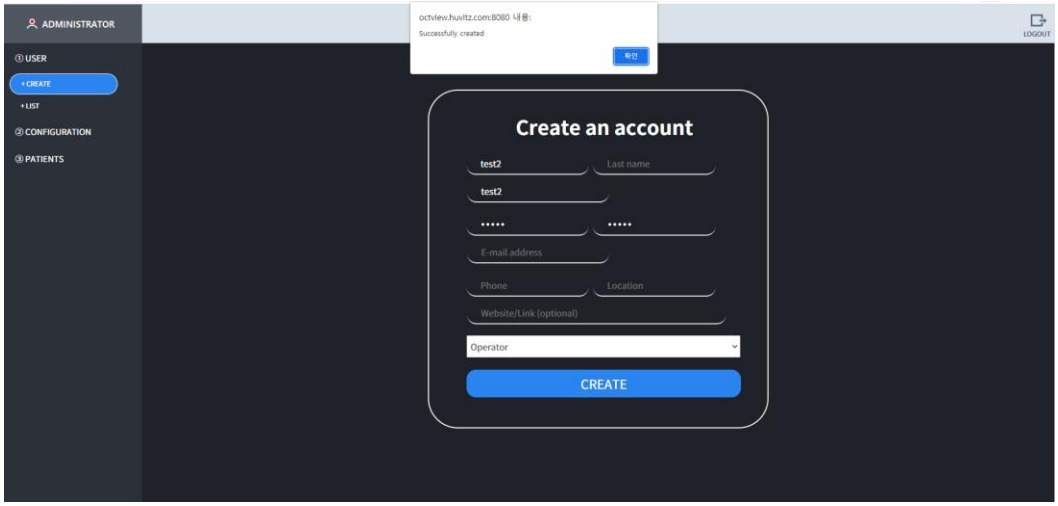
Administrator Screen

3.1.1 User Management

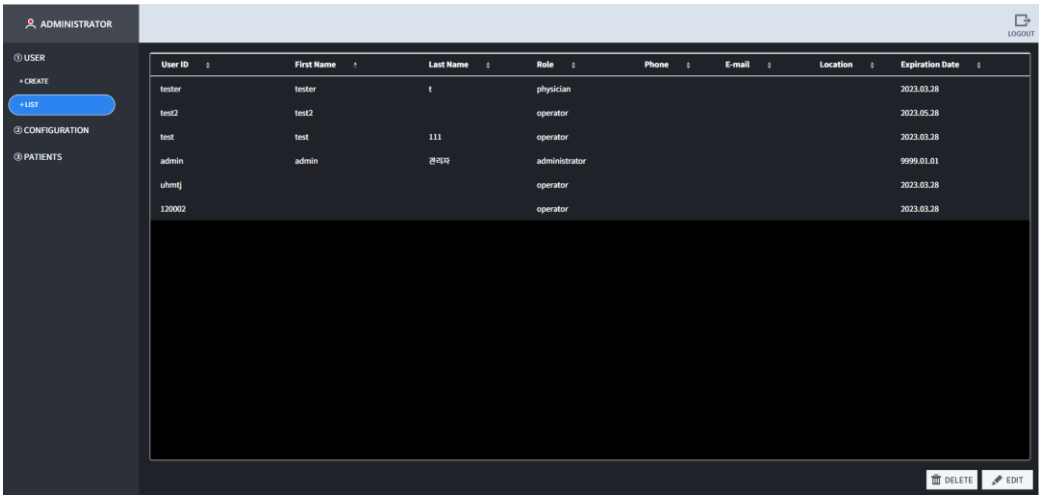
1 To add user, click in the following order; ‘USER’ > ‘CREATE’. Input the information of the user to add on to the ‘Create an account’ input space and then click on the CREATE button.



2 Pop-up appears when user is added on normally. Click on ‘Confirm’.

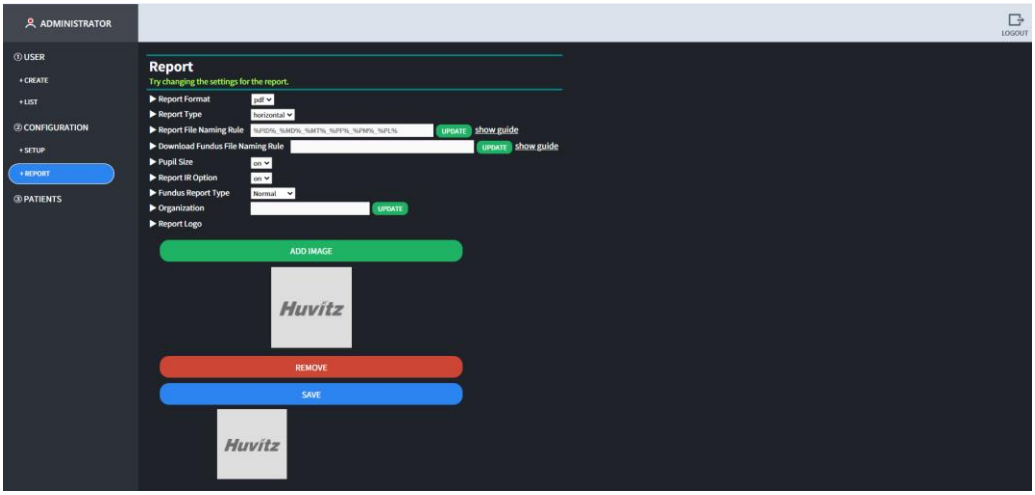


3 Currently registered user information appears when clicked in the following order; ‘USER’ > ‘LIST’. Each user can be modified and deleted. (Precaution) never delete the administrator. Since new user is added on, click on the ‘LOGOUT’ button at the upper right side and then log-in using new ID.



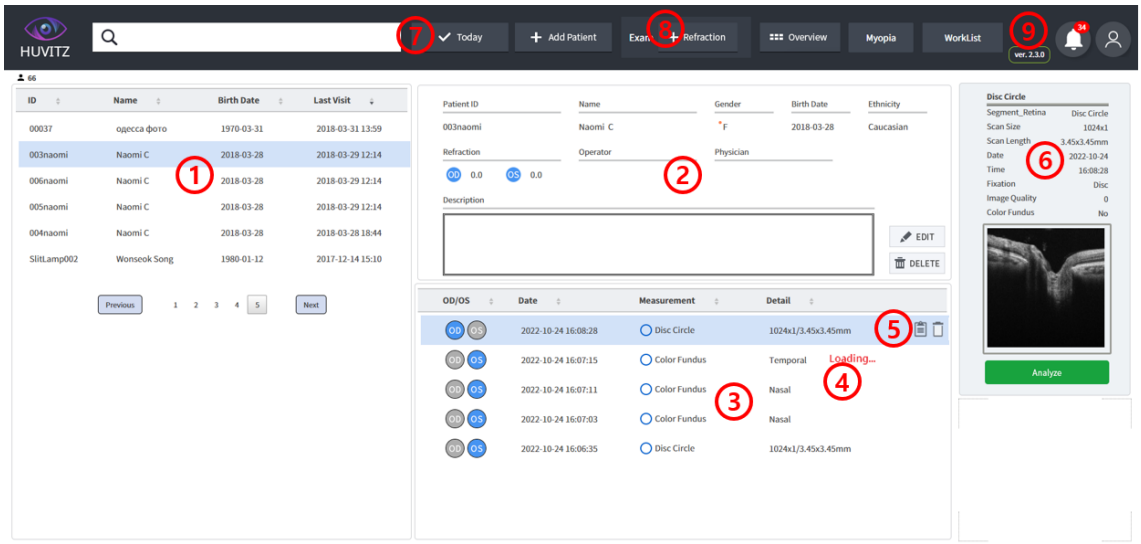
3.1.2 Configuration

May modify the settings related to the report in the REPORT menu.



Patient Information Screen

The following screen is the patient information screen that is seen first when regular user logs-in.



1 Shows the patient list saved in the HIIS-1 database currently. New patient gets added into the patient list when new patient information is transmitted at the HUVITZ's ophthalmic device or when patient is added on using 'Add Patient' in the HIIS-1. When mouse is placed on top of the patient list, URL copy icon that enables move to the applicable patient immediately, gets activated.

2 Outputs detailed information on the selected patient. Displays information such as patient ID, name, age, gender, ethnicity, eyesight (refractive index), operator and doctor in charge.

3 Outputs inspection list on the selected patient. Moves to the Analysis Screen of the selected inspection when double clicked.

4 In case of the inspection that is transmitted from and in progress in the equipment "Loading…" message is displayed. Inspection that is being transmitted and in progress gets completed, and when the Loading message disappears, it is possible to move to the Analysis Screen.

5 When the mouse is placed on top of the inspection list, URL copy icon that enables immediate move to the applicable inspection and delete inspection icon is activated.

6 Outputs summary information on the selected inspection. Moves to the Analysis Screen when 'Analyze' button is clicked on.

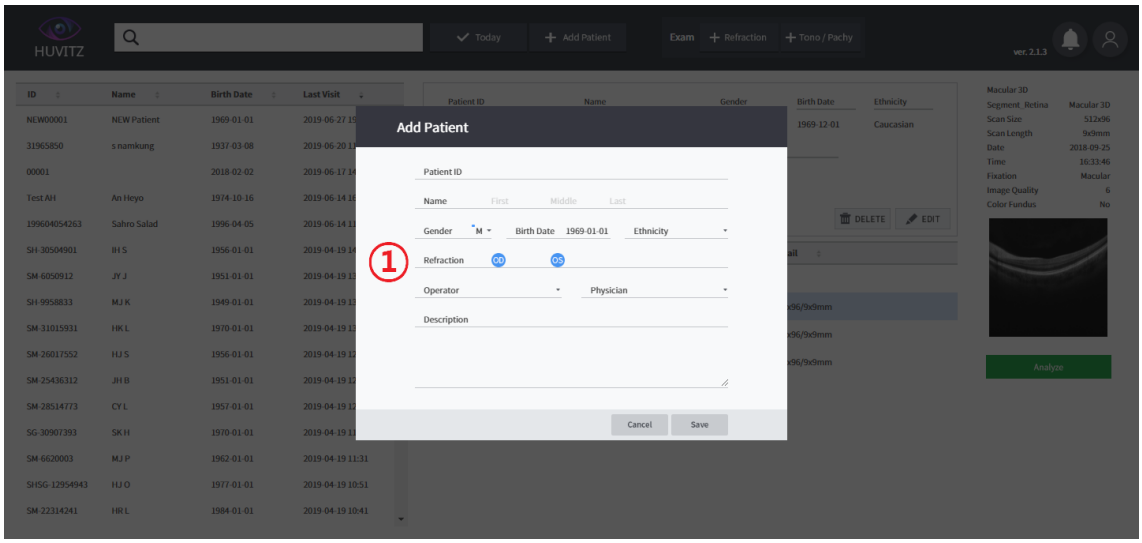
7 Only the inspection measured today is output when 'Today' button is clicked on. Able to add patient when 'Add Patient' button is clicked on.

8 By clicking the Refraction button, processed examination list will be shown. And it can be saved as its patient's own examination. The button is shown when choosing patient.

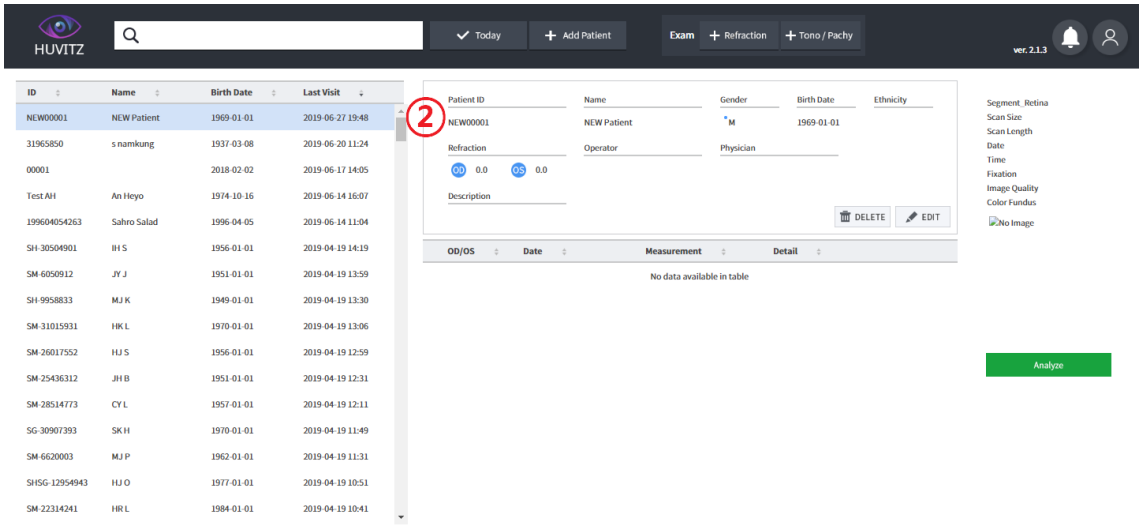
9 Information on the software version is displayed. When user icon is pressed on, ID logged-in currently is displayed, and it is possible to log-out when log-out button is pressed on.

Patient Add-on Screen

1 Click on the ‘Add Patient’ button to add new patient. When button is clicked on, pop-up for adding in a patient appears, and click on the ‘Save’ button after inputting information on the patient in the input space.

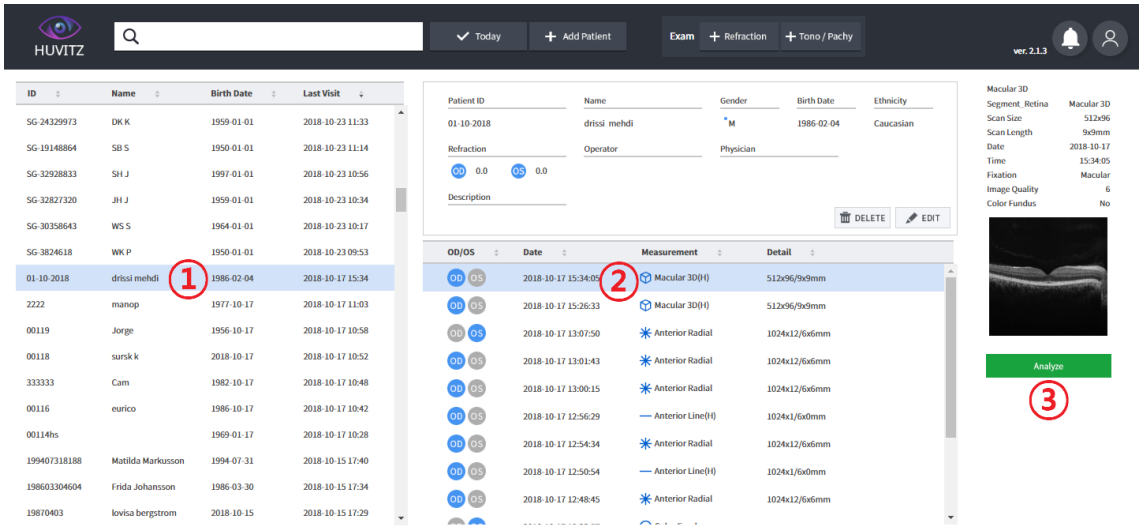


2 New patient was added on.



Move to Analysis Screen

Able to move to Analysis Screen by clicking on the '① -> ② -> ③' in this order. Moves first to Macular 3D Analysis Screen.



Analysis Screen Overview

1 Summary: Shows summary information on the results of measuring one eye. This tab is selected by default.

2 OU: Able to carry out comparative analysis on the measurement data on the both eyes.

3 Progression: Able to carry out comparative analysis with the various previous data using the currently selected data as the standard.

4 Comparison: Able to carry out comparative analysis on the data of the measurement part that is the same as that of the currently selected data using a different date.

5 3D: Shows 3D modeling image using image of measured result.

6 URL that can move immediately to the current inspection is copied.

7 Export the current inspection data as zip.

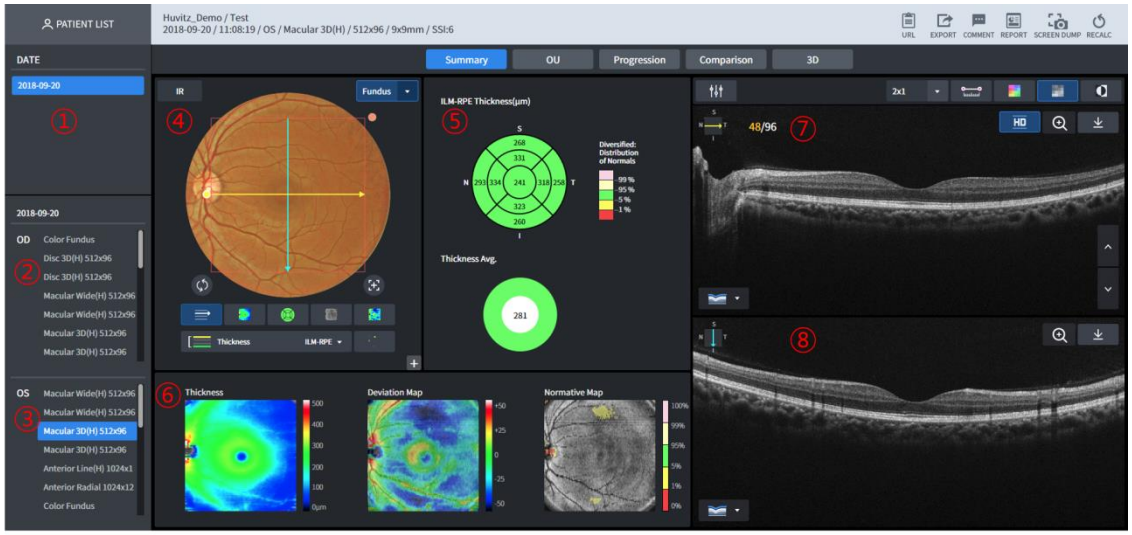
8 Displays the screen where Comment can be input. When Enter button input, menu modification and COMMENT button are pressed once again, Comment is saved. Input contents are output to the comment category at the report's lower part.

9 Report on the result displayed currently is saved as pdf or jpg.

10 Current screen is saved as pdf.

11 Recalculate the current inspection data

Macular 3D Analysis Screen – Summary (1)



1 Dates with current patient's inspection history are displayed.

2 This the selected date's right eye (OD) inspection list in case of current patient's 1.

3 This the selected date's left eye (OS) inspection list in case of current patient's 1.

4 Fundus image is displayed.

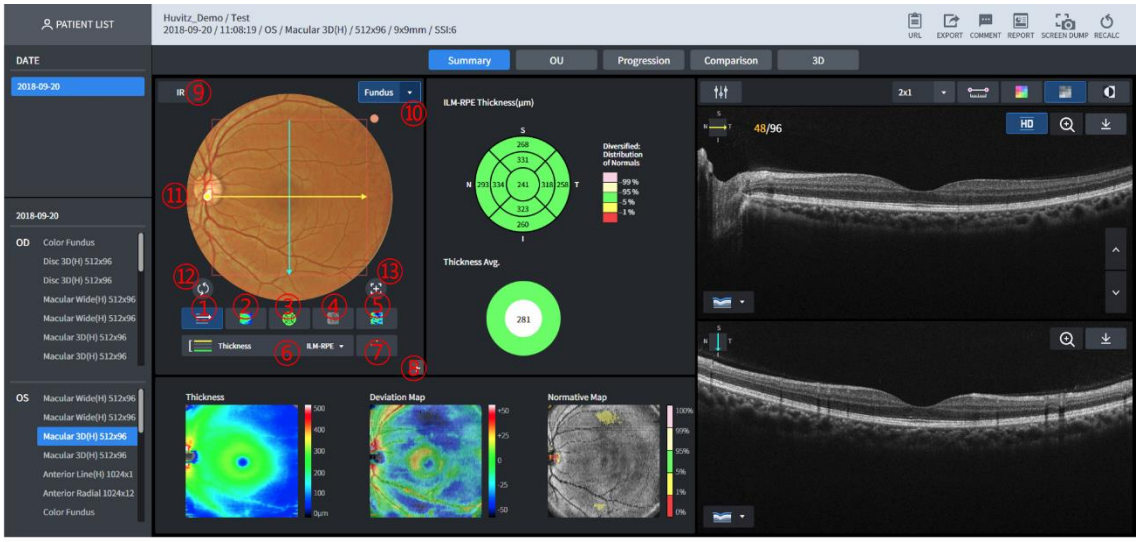
5 Thickness ETDRS chart and Thickness Average chart can be analyzed.

6 Thickness Map, Deviation Map, Normative Map and Enface image are displayed.

7 B Scan image for the yellow scan line (horizontal) shown on ④ is displayed.

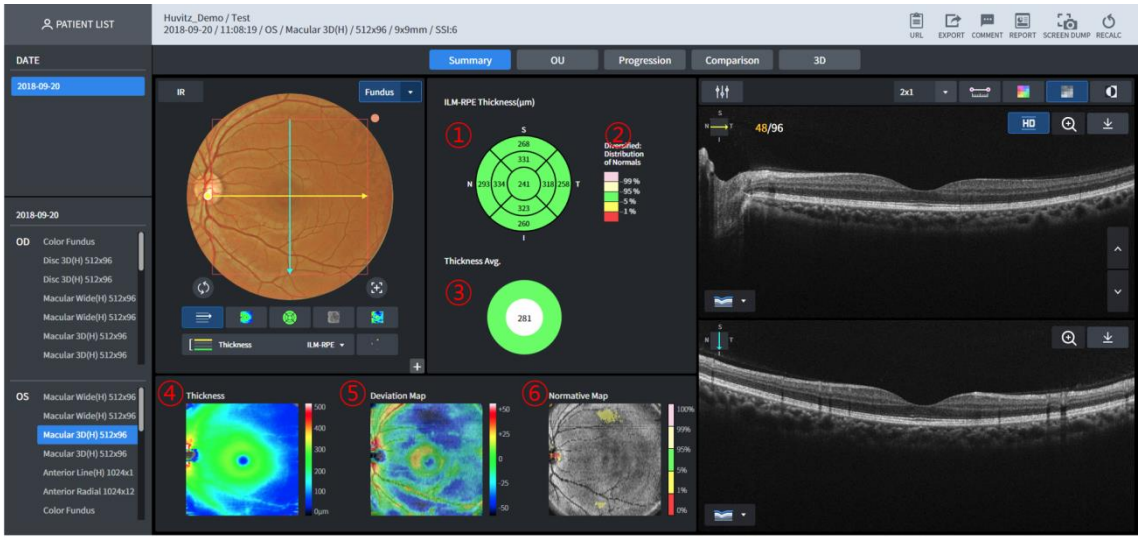
8 B Scan image for the blue scan line (vertical), shown on ④ is displayed (HD image fixation).

Macular 3D Analysis Screen – Summary (2)



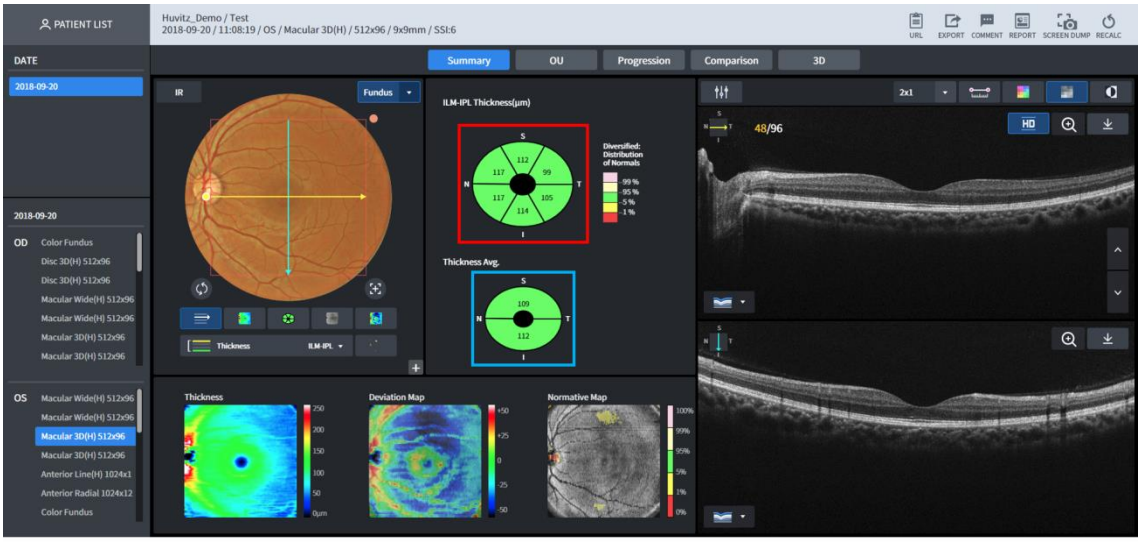
1 Button that displays scan path (No. ⑪) on top of the Fundus image or makes it disappear.
2 Button that displays Thickness Map on top of the Fundus image or makes it disappear.
3 Button that displays Thickness chart on top of the Fundus image or makes it disappear.
4 Button that displays Enface image on top of the Fundus image or makes it disappear.
5 Button that displays deviation from Normative data on top of the Fundus image or makes it disappear.
6 Thickness can be selected to ILM-RPE / ILM-IPL. Images displayed on ③~⑤ and Thickness chart are displayed differently depending on the thickness selection.
7 Button that displays Normative Map on top of the Fundus image or makes it disappear.
8 Able to amplify and view Fundus image.
9 Ensure that IR Fundus is displayed in the Fundus domain.
10 Displayed on the list when the button is pressed on when there is the Fundus image that can be displayed.
11 Fundus image is displayed. Basically, Color Fundus images that were filmed on the same day are displayed. If none, IR Fundus image is displayed.
B Scan image moves to the positon that is the same as that of the scan line when the handle at the end of the scan line on top of the Fundus image is drafted with mouse to move or it is possible to move immediately by clicking any part of the square with mouse (1-Point-Magic function). After clicking the mouse, it is possible to see that the thickness value is displayed on top of the Thickness Map while position is displayed on the Enface image.
12 Moves Thickness ETDRS Chart Center to the center of the scan domain.
13 Moves Thickness ETDRS Chart Center to the detected Fovea position.

Macular 3D Analysis Screen – Summary (3)



1 Displays Thickness chart.
Displayed differently depending on the selected Thickness (ILM-RPE/ILM-IPL) domain.

- ILM-RPE
  Diameter of 6mm is divided into 9 domains, and the ETDRS Chart that displays average thickness by each domain is displayed.
- ILM-IPL



GCC Chart that displays average by dividing thickness Width diameter of 4.8mm and length diameter of 4mm for oval shape into six domains is displayed (the part in the above shown image that is displayed in red square)

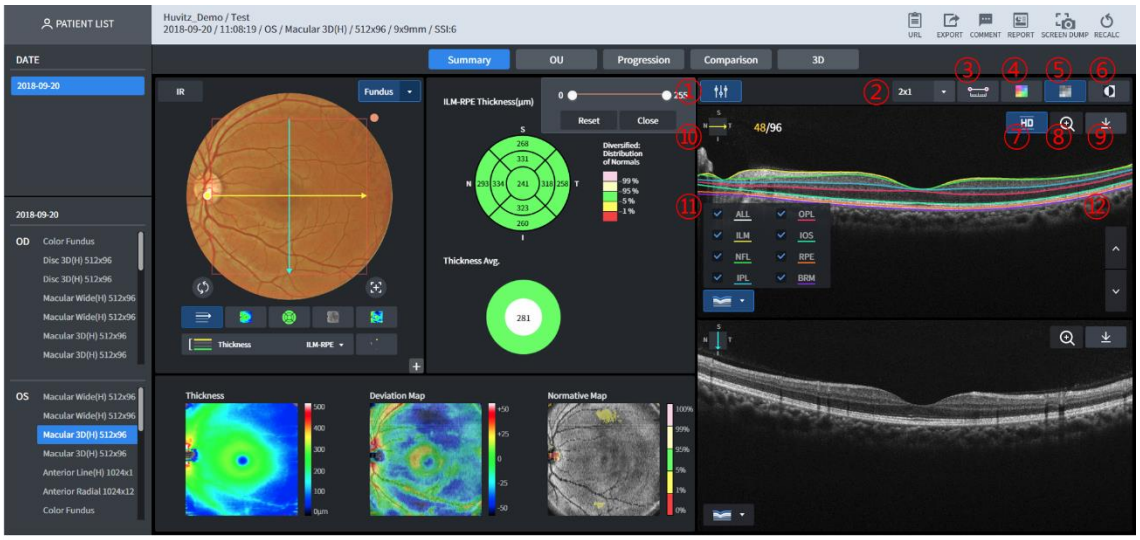
2 Normative data's legend is displayed
3 Selected Thickness Average Chart is displayed.

- ILM-RPE
  Total average thickness for the diameter of 6mm domain is displayed.
- ILM-IPL
  Average thickness is displayed by dividing width diameter of 4.8mm, length diameter of

4mm for oval shape to higher and lower parts (the part in the No. ① image that is displayed in blue square)

4 ILM-IPL Thickness Map is displayed. Applicable position's thickness can be seen when the top of the image is clicked on with the mouse (1-Point-Magic function)
5 ILM-RPE Thickness Map is displayed. Able to use 1-Point-Magic function.
6 Enface image is displayed. Able to use 1-Point-Magic function.

Macular 3D Analysis Screen – Summary (4)



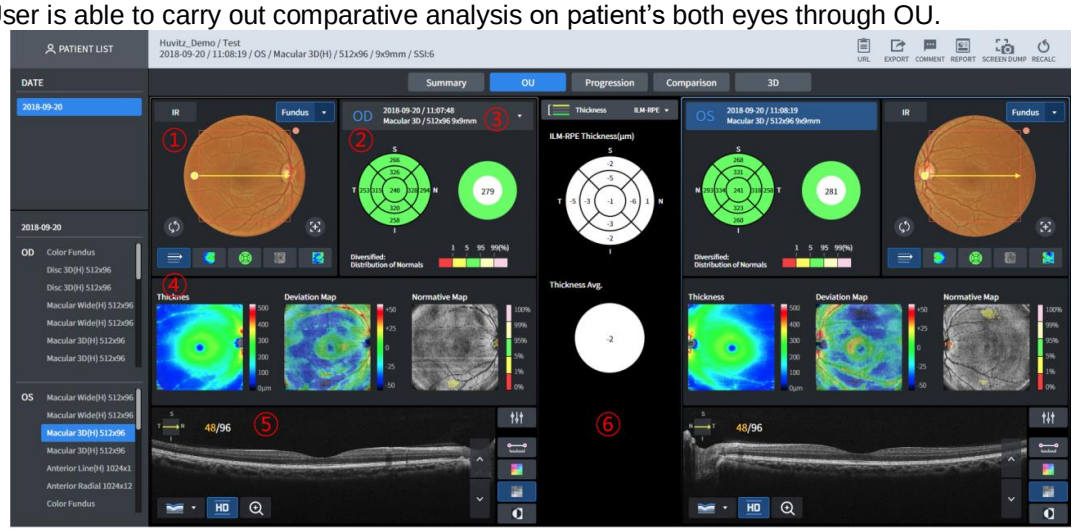
1 Button that can adjust B Scan image's Brightness/Contrast.
2 Able to designate the number of B Scan images that are displayed on one screen. Displays up to the number of (Line x row).
3 Able to measure the length by clicking the mouse at the inside of the B Scan image. After activating by clicking on this button, click on the mouse on the B Scan image to move the cursor up to the desired length. Then, click again to display length information.
4 Displays by applying Color Map in the B Scan image.
5 B Scan image is displayed in Monochrome.
6 B Scan image is displayed in Monochrome after reversal
7 HD (high definition) B Scan image is displayed.
8 B Scan image is displayed by amplifying.
9 Download a currently displayed Bscan as jpg
10 Displays the direction of the Scan that is currently on display in the B Scan image.
11 Button that displays information of seven segmentations in the B Scan image. Able to select the segmentation among the seven that display (multiple selection enabled)
7 Among the segmentations, selected ones and each is displayed in different colors.

- Types of segmentations displayed
  ILM, NFL, IPL, OPL, IOS, RPE, BRM

12 B Scan image can be subjected to browsing. Animation effect is displayed when pressing on the up/down button.

Macular 3D Analysis Screen – OU

User is able to carry out comparative analysis on patient's both eyes through OU.



1 Displays Fundus image. Basically, Color Fundus image measured on the same day is displayed, but if none, then IR Fundus image is displayed. When the end of the scan line, displayed on top of the Fundus image is dragged with mouse, B Scan image displayed on No. ⑤ moves to the position that is the same as that of the scan line. When clicked on top of the Fundus image with mouse, then it is possible to use the 1PM (1-Point-Magic) function.

2 Thickness Chart and Thickness Average for the selected Thickness are shown on the upper part of No. ⑥.

3 Selects the measurement data for the comparative analysis.

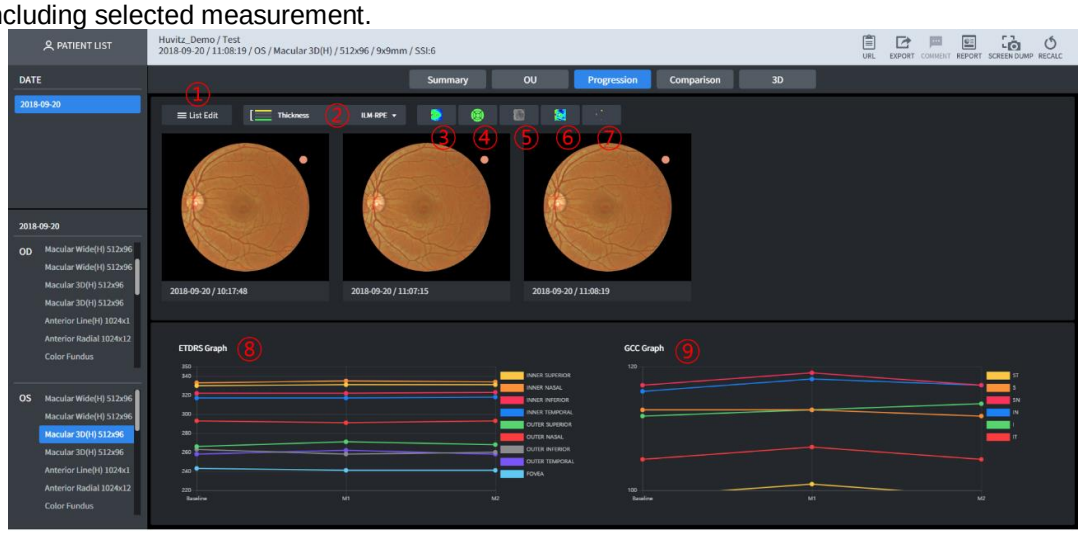
4 Thickness Map, Deviation Map and Normative Map are displayed.

5 B Scan image is displayed.

6 Thickness Chart and Average difference of the two sides are displayed according to the selected Thickness.

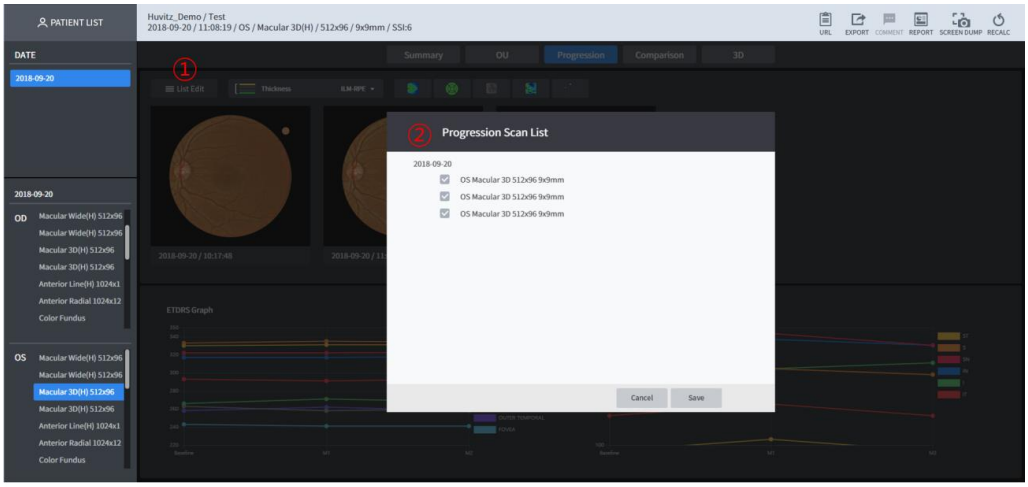
Macular 3D Analysis Screen – Progression (1)

User can analyze patient state trend through Progression. Seven past data are displayed including selected measurement.



1 Able to select measurements subjected to comparative analysis independently through Progression.
2 Able to select Thickness. (ILM-RPE or ILM-IPL)
3 Thickness Map is displayed on top of each Fundus image.
4 Thickness Chart is displayed on top of each Fundus image.
5 Enface is displayed on top of each Fundus image.
6 Deviation information with the Normative data is displayed on top of each Fundus image.
7 Normative Map is displayed on top of each Fundus image.
8 Trend for each ETDRS domain for the listed measurement is displayed.
9 Trend for each GCC domain for the listed measurement is displayed.

Macular 3D Analysis Screen – Progression (2)



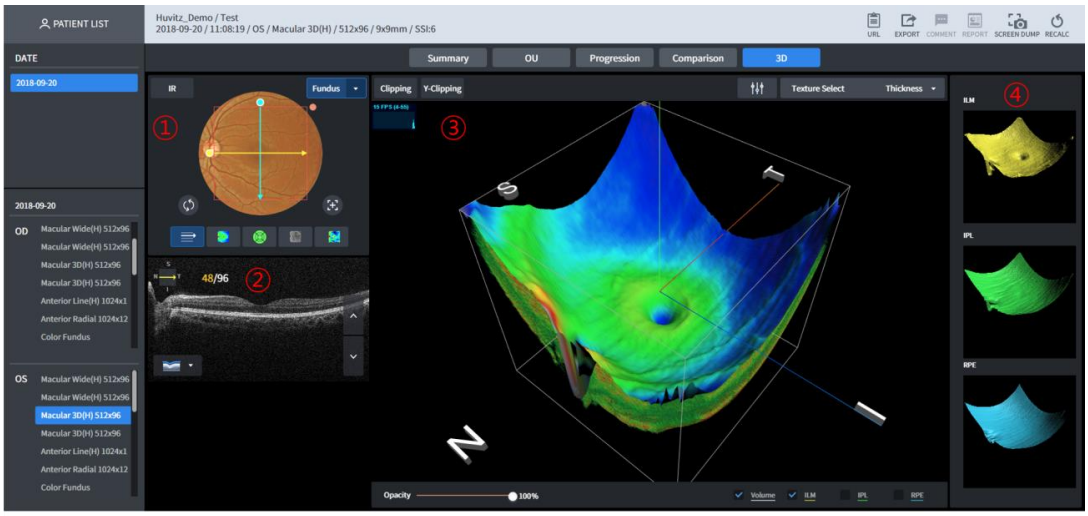
1 Click to select the measurements to compare through Progression.
2 Patient measurement information is displayed in the form of a list. Check measurement subjected to comparative analysis and click on the ‘Save’ button.

Macular 3D Analysis Screen – Comparison

User can carry out comparative analysis on the measurement data for the diagnosed patient’s same area through Comparison. Function is the same as that of the Macular 3D Analysis Screen – OU.

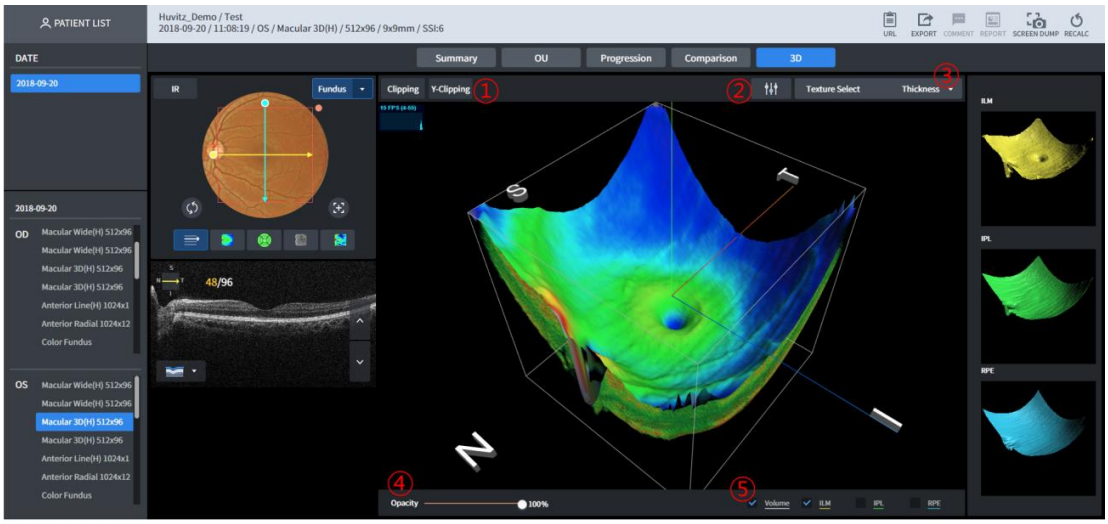
1 Selects the measurement data subjected to comparative analysis.

Macular 3D Analysis Screen – 3D (1)



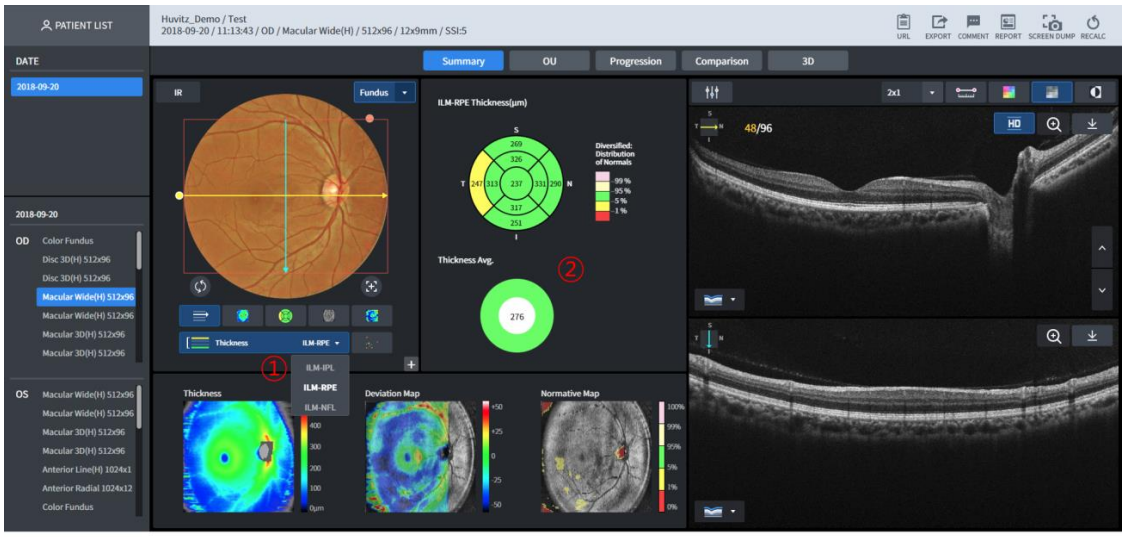
1 IR and Color Fundus are displayed. Able to show by moving the Scan Line vertically/horizontally by dragging the mouse.
2 B-Scan image is displayed.
3 3D modeling image is displayed.
4 3D Surface modeling image is displayed.

Macular 3D Analysis Screen – 3D (2)



1 3D modeling image's vertical/horizontal sides can be viewed.
2 3D modeling image's Brightness/Contrast can be calibrated.
3 Able to modify 3D modeling image's surface texture.
4 3D modeling image's transparency level can be calibrated. Becomes more transparent when closer to 0%.
5 Able to select one among the four types of models (volume, ILM, IPL, RPE surface texture) displayed on the 3D modeling image.

Macular Wide Analysis Screen

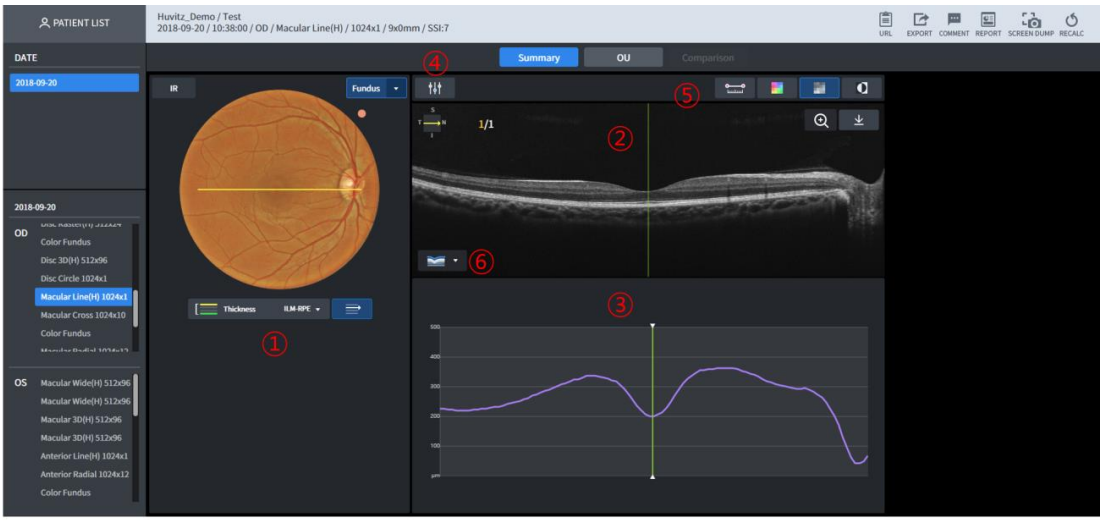


Macular Wide provides Macular, Disc simultaneous Analysis Screen.
Result of the analysis on the below mentioned domain is displayed on No. 2 according to the No. 1 Thickness selection.

- ILM-IPL : Macular
- ILM-RPE: Macular
- ILM-NFL: Disc

Able to analyze by modifying the domain, same for OU, Progression and Comparison according to the Thickness selection.

Macular Line Analysis Screen – Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.
Scan path is displayed on top of the Fundus image line.
Thickness can be selected to ILM-RPE / ILM-IPL. No. ③ Thickness graph are displayed differently depending on the thickness selection.
2 B Scan image is displayed.
3 Thickness for B Scan image is displayed in graph.
4 B Scan image's Brightness / Contrast can be calibrated.

5 Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.
6 Able to display seven Segmentation information on the B Scan image.

Macular Line Analysis Screen – OU

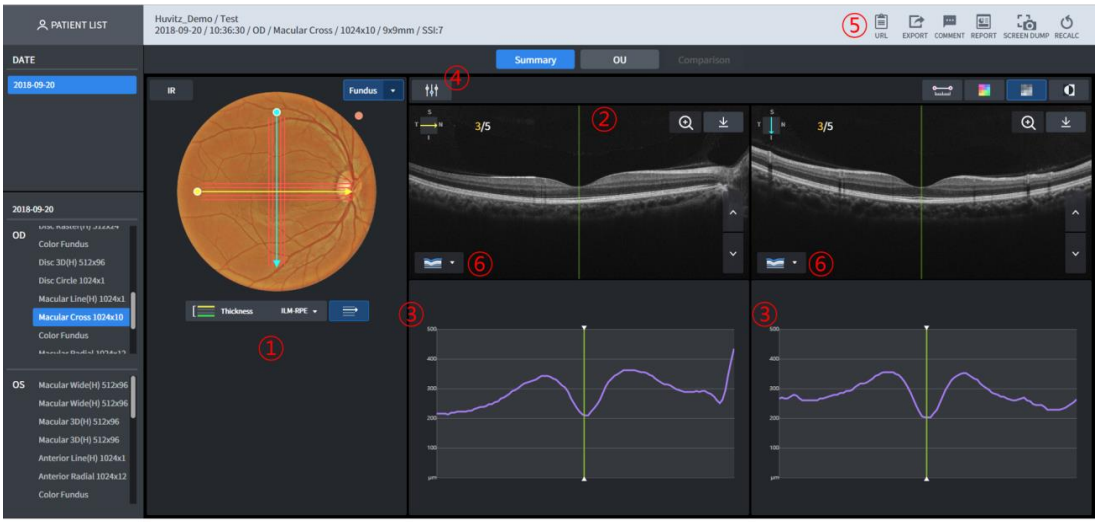
User can carry out comparative analysis of the data on the measurement of the patients' two eyes through OU.

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.
2 B Scan image is displayed.
3 Thickness is displayed as a graph.
4 Thickness graphs of the both eyes are compared and displayed.

Macular Line Analysis Screen – Comparison

1 Measurement data that serves as the standard for comparison.
2 Able to select the measurement data that serves as the standard for comparison.

Macular Cross Analysis Screen – Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.
Scan path is displayed on top of the Fundus image line.

Thickness can be selected to ILM-RPE / ILM-IPL. No. ③ Thickness graph are displayed differently depending on the thickness selection.

2 B Scan image is displayed. Horizontal and vertical scans are displayed on the left and right, respectively.

3 Thickness for the B Scan image is displayed as a graph. Likewise, left side is the horizontal scan while the right side is the vertical scan.

4 B Scan image's Brightness / Contrast can be calibrated.

5 Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.

6 Able to display seven Segmentation information on the B Scan image.

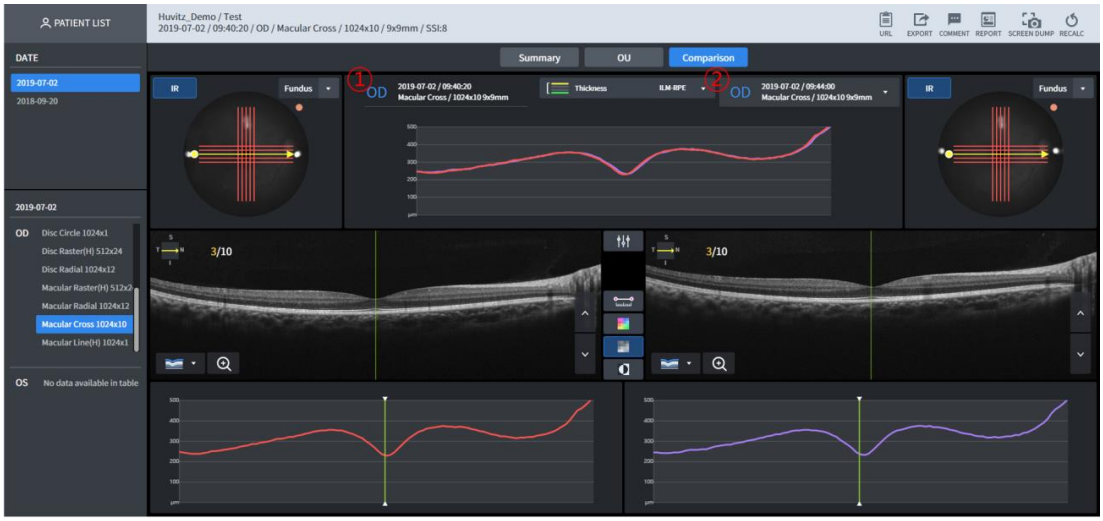
Macular Cross Analysis Screen – OU

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

2 B Scan image is displayed.

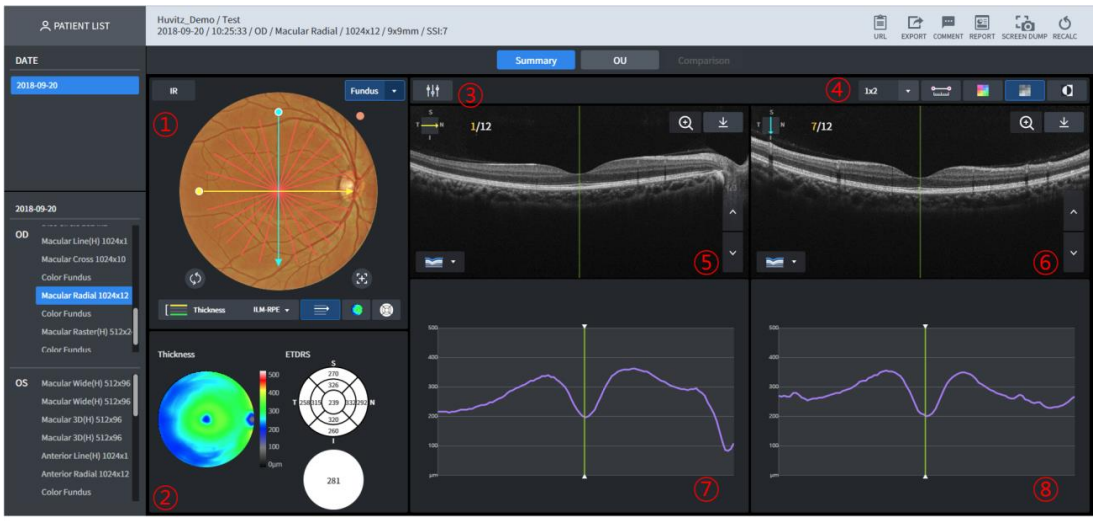
3 Thickness graph is displayed.
4 Thickness graphs of the both eyes are compared and displayed.

Macular Cross Analysis Screen – Comparison



1 Measurement data that serves as the standard for comparison.
2 Able to select the measurement data that serves as the standard for comparison.

Macular Radial Analysis Screen - Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed. Able to use 1-Point-Magic function.
2 Thickness Map for the selected Thickness is displayed. Thickness chart, Average information is displayed. Able to use 1-Point-Magic function.
3 B Scan image's Brightness / Contrast can be calibrated.
4 Able to designate the number of B Scan images displayed on one screen. Able to display up to the number of (lines x rows).
Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.
5 B Scan image for the yellow scan line is displayed.

6 B Scan image for the blue scan line is displayed.
7 Thickness graph for the yellow scan line is displayed.
8 Thickness graph for the blue scan line is displayed.

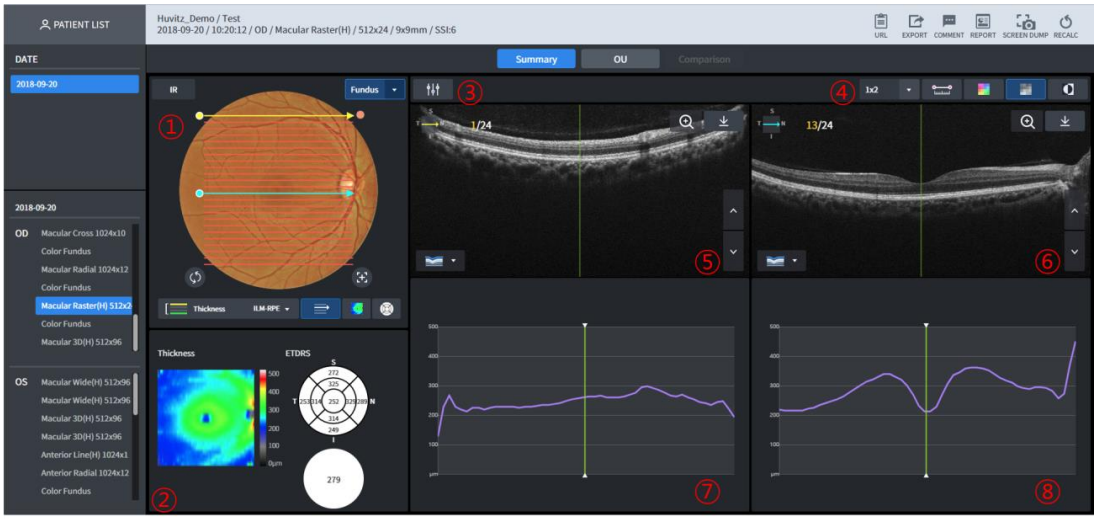
Macular Radial Analysis Screen – OU

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.
2 B Scan image for the yellow scan line is displayed.
3 Thickness graph for the yellow scan line is displayed.
4 Thickness graphs of the both eyes are compared and displayed.

Macular Radial Analysis Screen – Comparison

1 Measurement data that serves as the standard for comparison.
2 Able to select the measurement data that serves as the standard for comparison.

Macular Raster Analysis Screen – Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed. Able to use 1-Point-Magic function.

2 Thickness Map for the selected Thickness is displayed. Thickness chart, Average information is displayed. Able to use 1-Point-Magic function.

3 Scan image's Brightness / Contrast can be calibrated.

4 Able to designate the number of B Scan images displayed on one screen. Able to display up to the number of (lines x rows).
Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.

5 B Scan image for the yellow scan line is displayed.

6 B Scan image for the blue scan line is displayed.

7 Thickness graph for the yellow scan line is displayed.

8 Thickness graph for the blue scan line is displayed

Macular Raster Analysis Screen – OU

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

2 B Scan image for the yellow scan line is displayed.

3 Thickness graph for the yellow scan line is displayed.

4 Thickness graphs of the both eyes are compared and displayed

Macular Raster Analysis Screen – Comparison

1 Measurement data that serves as the standard for comparison.

2 Able to select the measurement data that serves as the standard for comparison

Disc 3D Analysis Screen – Summary

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed. List up the list by clicking on the button when there is Color Fundus image that can be displayed. Able to use 1-Point-Magic function.
Thickness map and Enface image that are displayed on top of the Fundus image according to the Thickness (ILM-RPE/ILM-NFL) selection are displayed differently.
Auto center and restore center buttons below the Fundus image that moves position of the RNFL Chart to Disc position or to the center of the scan domain position.

2 Disc and Cup domain's measurement information is displayed.

3 Displays diameter of 3.45mm ring's Thickness Profile by stacking with the Normative data.

4 Displays diameter of 3.45mm ring's B Scan by synthesizing.

5 Displays diameter of 3.45mm ring's Thickness with the average for each T-S-N-I domain.

6 Displays each T-S-N-I domain of No. ⑤ by segmenting into three parts.

7 B Scan image is displayed for the yellow scan line (horizontal) displayed on No. ①.

8 B Scan image for the blue scan line (vertical) displayed on No. ① is displayed (HD image fixation)

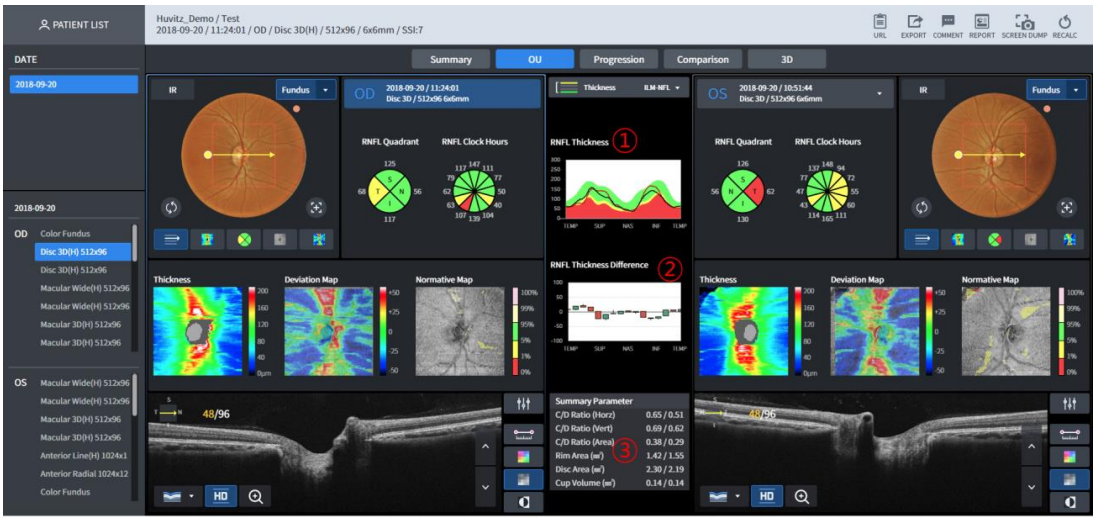
9 Scan image's Brightness / Contrast can be calibrated.

10 Able to designate the number of B Scan images displayed on one screen. Able to display up to the number of (lines x rows).
Able to display by applying measurement of distance among the two points of the B Scan image, Color Map Overlay, Monochrome and Monochrome reverse function.

11 Thickness Map and Enface image are displayed. Able to use 1-Point-Magic function.

12 Other functions are the same as those of the Macular 3D Analysis Screen – Summary.

Disc 3D Analysis Screen – OU



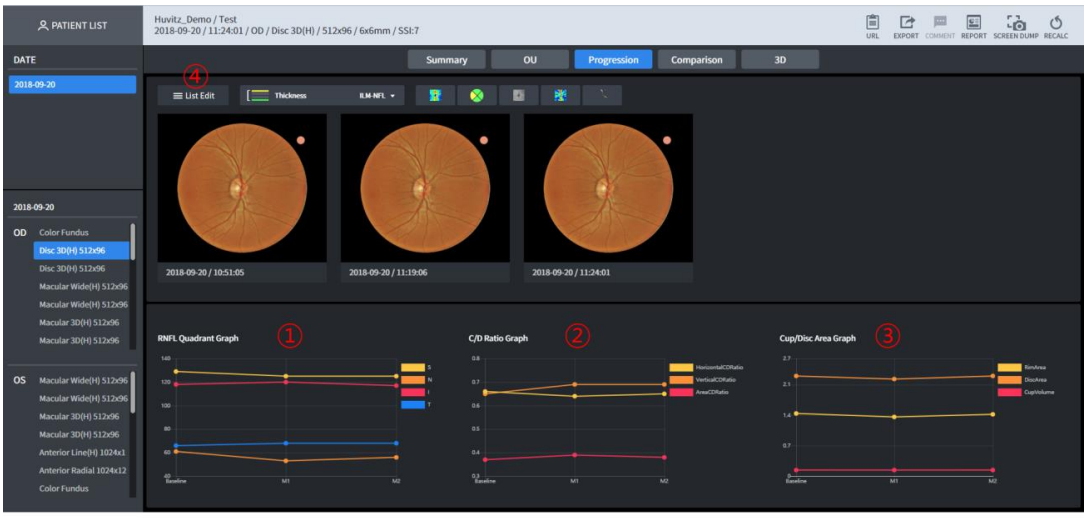
1 Displays diameter of 3.45mm ring's Thickness Profile stacked with Normative data along with the two eyes.

2 Difference value of ① is displayed as candle chart.

3 Measurement information figure for the Disc domain for both eyes is displayed together.

4 Other functions are the same as those of the Macular 3D Analysis Screen – OU.

Disc 3D Analysis Screen – Progression



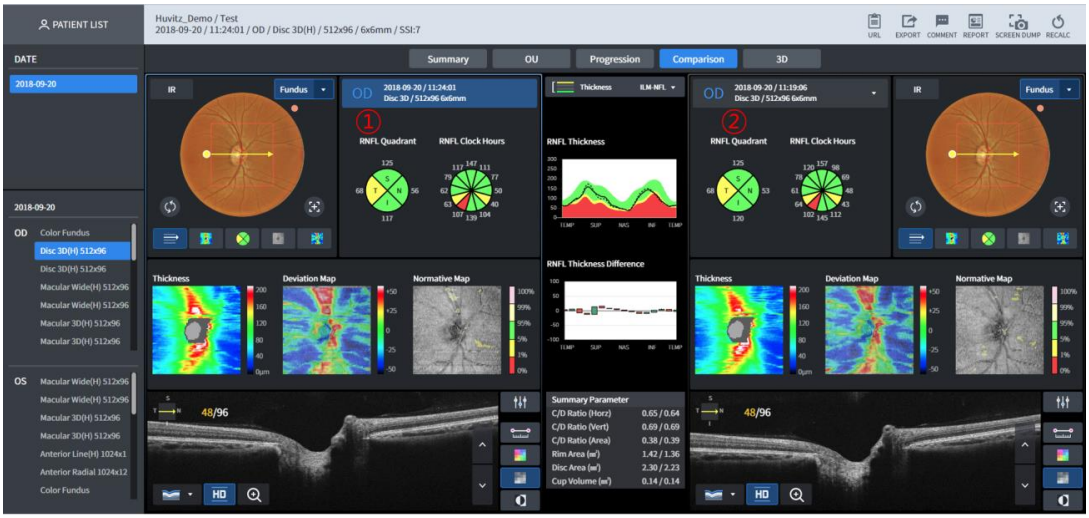
1 RNFL-4 value trend for the listed measurement is displayed in graph.

2 Cup/Disc Ratio trend for the listed measurement is displayed in graph.

3 Cup/Disc Area trend for the listed measurement is displayed in graph.

4 Able to select measurements subjected to comparative analysis individually through Progression

Disc 3D Analysis Screen – Comparison

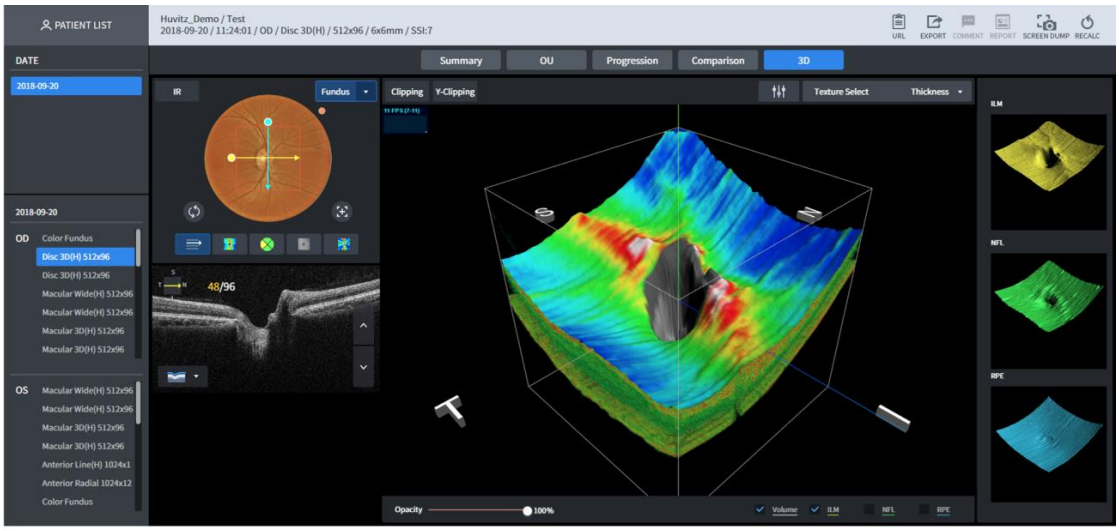


1 Measurement data that serves as the standard for comparison.

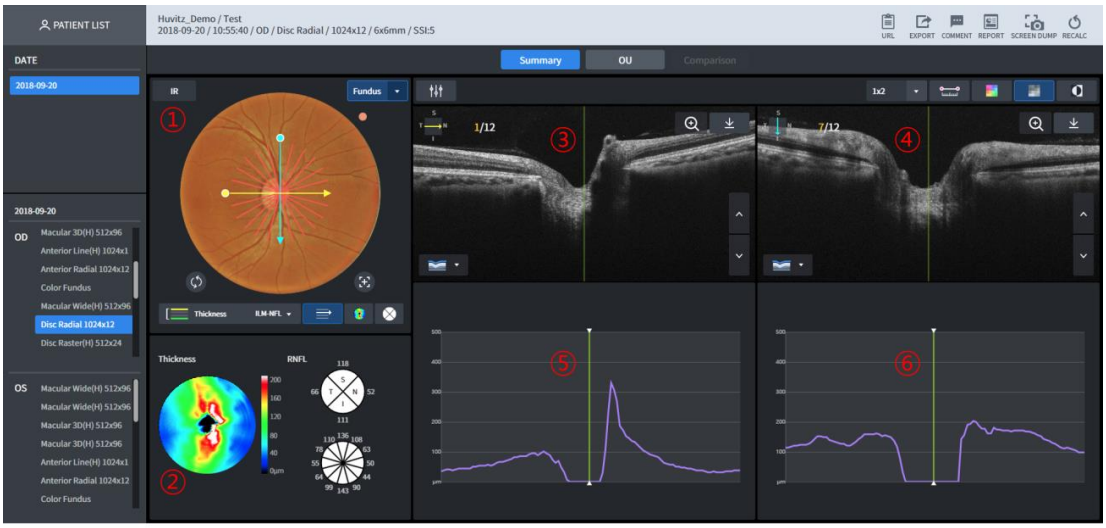
2 Able to select the measurement data that serves as the standard for comparison

Disc 3D Analysis Screen – 3D

Function is same as that of the Macular 3D Analysis Screen – 3D.



Disc Radial Analysis Screen – Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed. Able to use 1-Point-Magic function.

2 Thickness Map for the selected Thickness is displayed. RNFL-4 Chart and RNFL-12 Chart are displayed. Able to use 1-Point-Magic function.

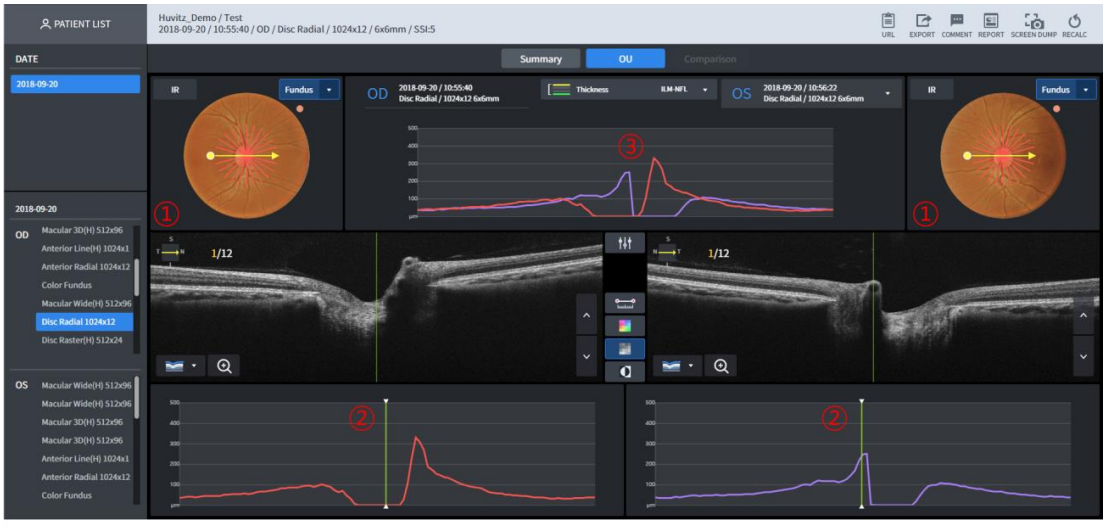
3 B Scan image for the yellow scan line is displayed.

4 B Scan image for the blue scan line is displayed.

5 Thickness graph for the yellow scan line is displayed.

6 Thickness graph for the blue scan line is displayed.

Disc Radial Analysis Screen – OU



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

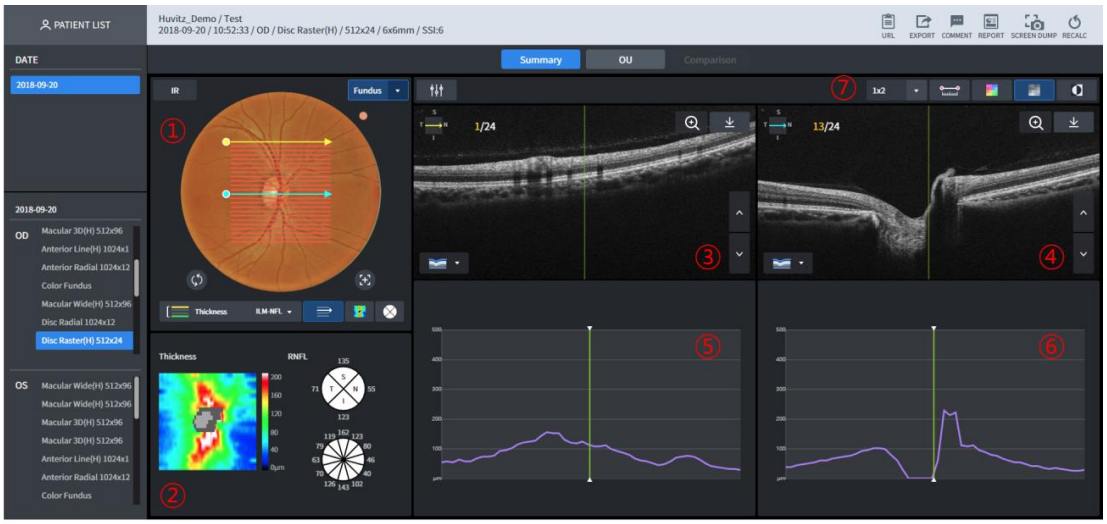
2 Thickness graph for the yellow scan line is displayed.

3 Thickness graphs of the both eyes are compared and displayed.

Disc Radial Analysis Screen – Comparison

1 Able to carry out comparative analysis by selecting the list on the measurements of the same area.

Disc Raster Analysis Screen – Summary



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed. Able to use 1-Point-Magic function.

2 Thickness Map for the selected Thickness is displayed. RNFL-4 Chart and RNFL-12 Chart are displayed. Able to use 1-Point-Magic function.

3 B Scan image for the yellow scan line is displayed.

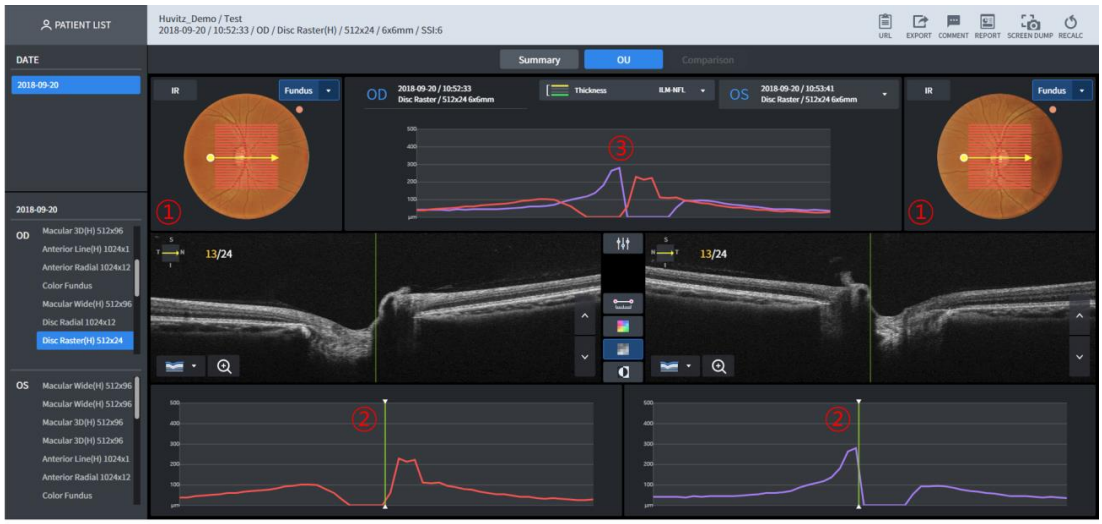
4 B Scan image for the blue scan line is displayed.

5 Thickness graph for the yellow scan line is displayed.

6 Thickness graph for the blue scan line is displayed.

7 Able to designate the number of B Scan images displayed on one screen. Able to display up to the number of (lines x rows).
Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.

Disc Raster Analysis Screen – OU



1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

2 Thickness graph for the yellow scan line is displayed.

3 Thickness graphs of the both eyes are compared and displayed.

Disc Raster Analysis Screen – Comparison

1 Able to carry out comparative analysis by selecting the list on the measurements of the same area.

Disc Circle Analysis Screen – Summary

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

2 B Scan image filmed along the yellow circle is displayed.

3 Thickness graph for the B Scan is displayed.

4 Able to display by applying measurement of the distance between the two points of B Scan image, Color Map Overlay, Monochrome, and Monochrome reverse function.

Disc Circle Analysis Screen – OU

1 Fundus image is displayed. Basically, Color Fundus image, measured on the same day is displayed. But if none, IR Fundus image is displayed.

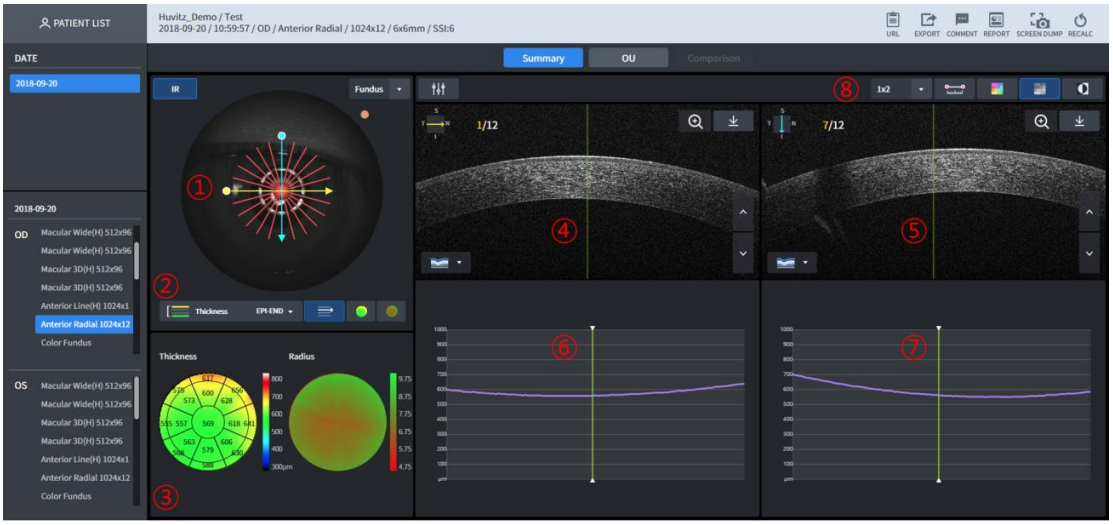
2 Thickness graph for the yellow Circle scan line is displayed.

3 Thickness graphs of the both eyes are compared and displayed.

Disc Circle Analysis Screen – Comparison

1 Able to carry out comparative analysis by selecting the list on the measurements of the same area.

Anterior Radial Analysis Screen – Summary



1 Fundus image is displayed. Basically, IR Fundus image is displayed. Scan path is displayed on top of the Fundus image.

2 Selects Thickness to display on top of the Fundus image.

3 Thickness and curvature measured according to the selected Thickness domain is displayed into height through Color Map.

4 B Scan image for the yellow scan line is displayed.

5 B Scan image for the blue scan line is displayed.

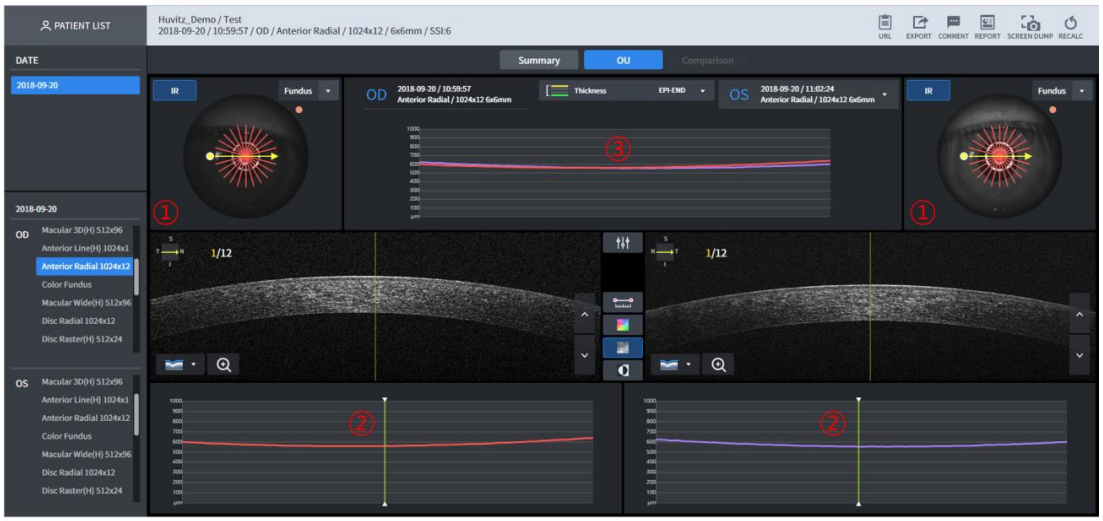
6 Thickness graph for the yellow scan line is displayed.

7 Thickness graph for the blue scan line is displayed.

8 Able to designate the number of B Scan images displayed on one screen. Able to display up to the number of (lines x rows).
Able to display by applying measurement of the distance between the two points of B Scan

image, Color Map Overlay, Monochrome, and Monochrome reverse function.

Anterior Radial Analysis Screen – OU

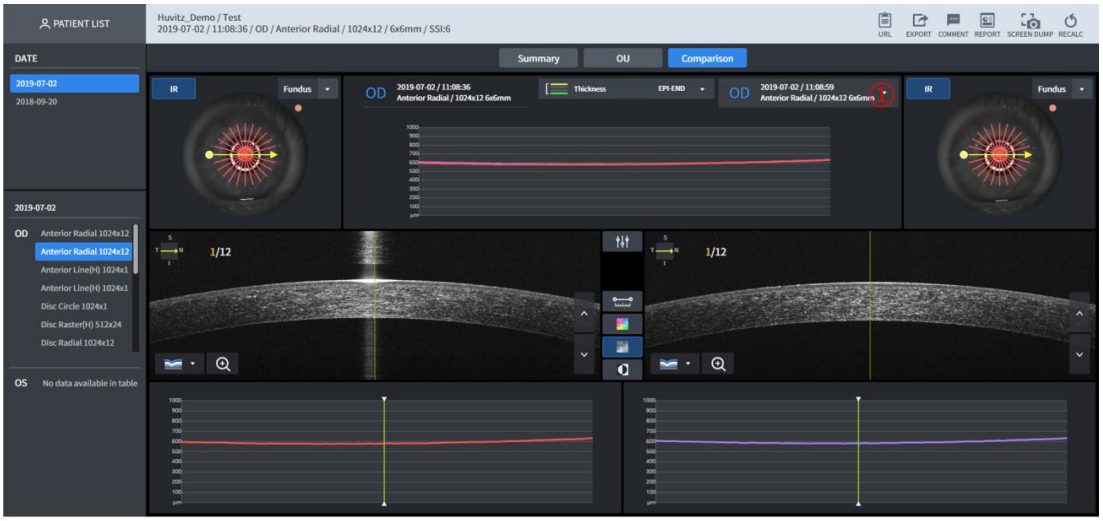


1 Fundus image is displayed. Basically, IR Fundus image is displayed.

2 Thickness graph for the yellow scan line is displayed.

3 Thickness graphs of the both eyes are compared and displayed.

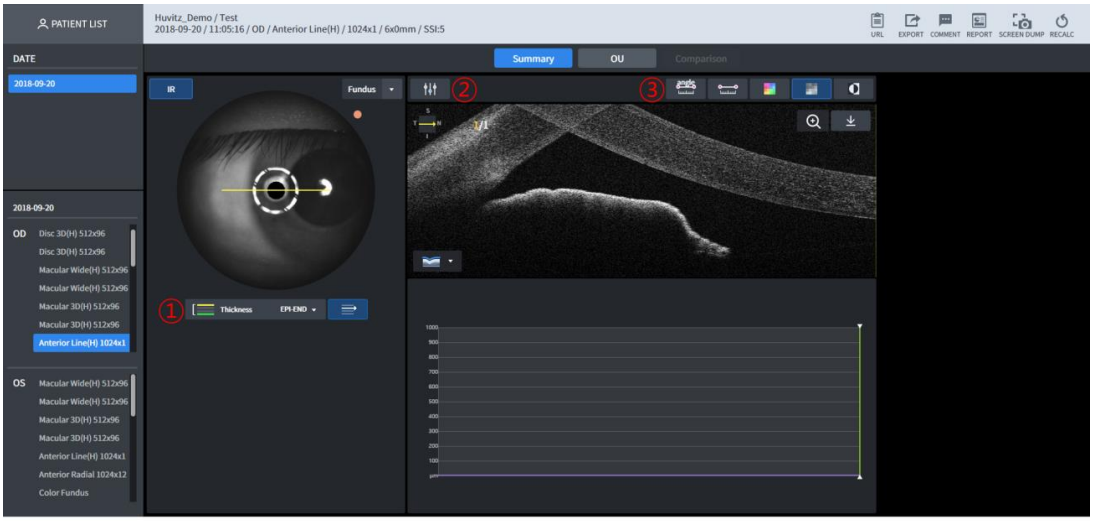
Anterior Radial Analysis Screen – Comparison



1 Able to carry out comparative analysis by selecting the list for the measurement of the same part.

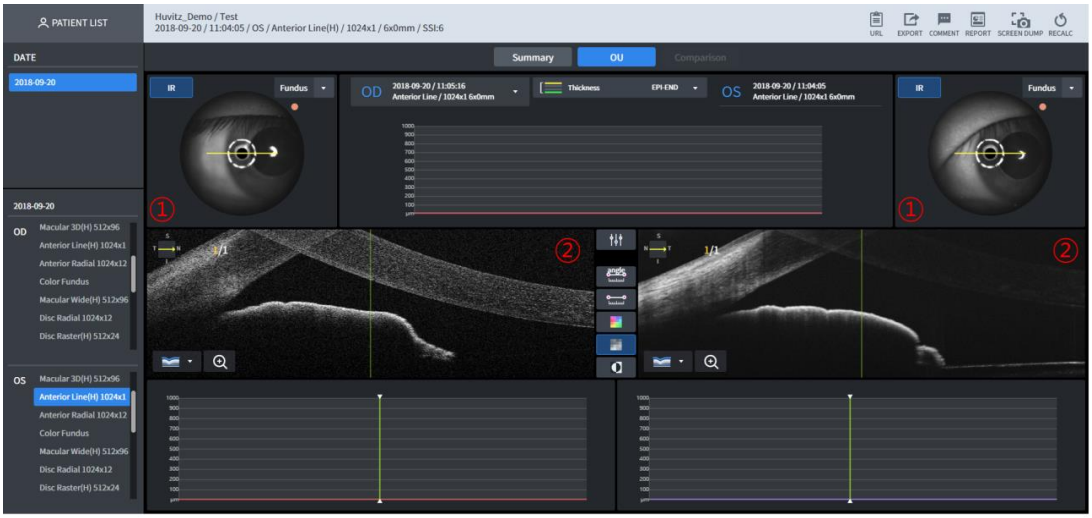
2 Function is the same as that of the Anterior Radial Analysis Screen – OU.

Anterior Line Analysis Screen – Summary



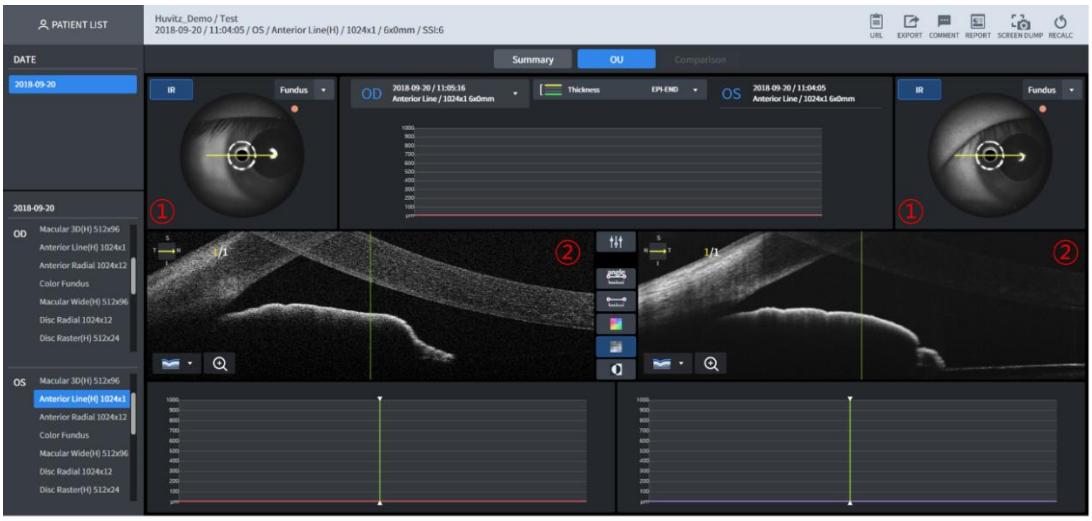
1 Fundus image is displayed. Basically, IR Fundus image is displayed. Scan path is displayed on top of the Fundus image.
2 B Scan image's Brightness / Contrast can be calibrated
3 Able to display by measuring the angle and length within the B Scan, Color Map Overlay, Monochrome, and by applying Monochrome reverse function.

Anterior Line Analysis Screen – OU



1 Fundus image is displayed. Basically, IR Fundus image is displayed.
2 Bscan for the both eyes are displayed.

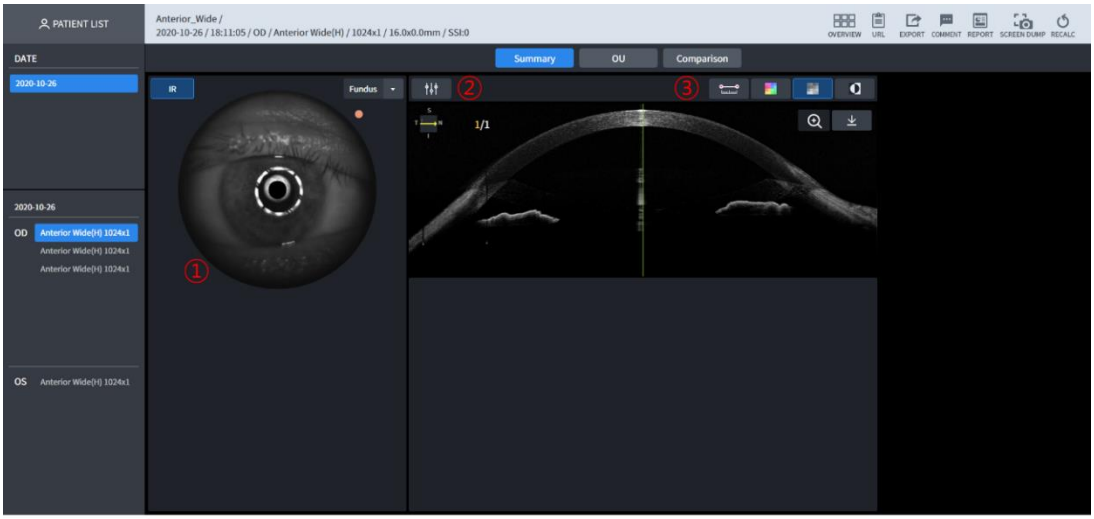
Anterior Line Analysis Screen – Comparison



1 Able to carry out comparative analysis by selecting the list for the measurement of the same part.

2 Function is the same as that of the Anterior Line Analysis Screen – OU.

Anterior Wide Analysis Screen – Summary

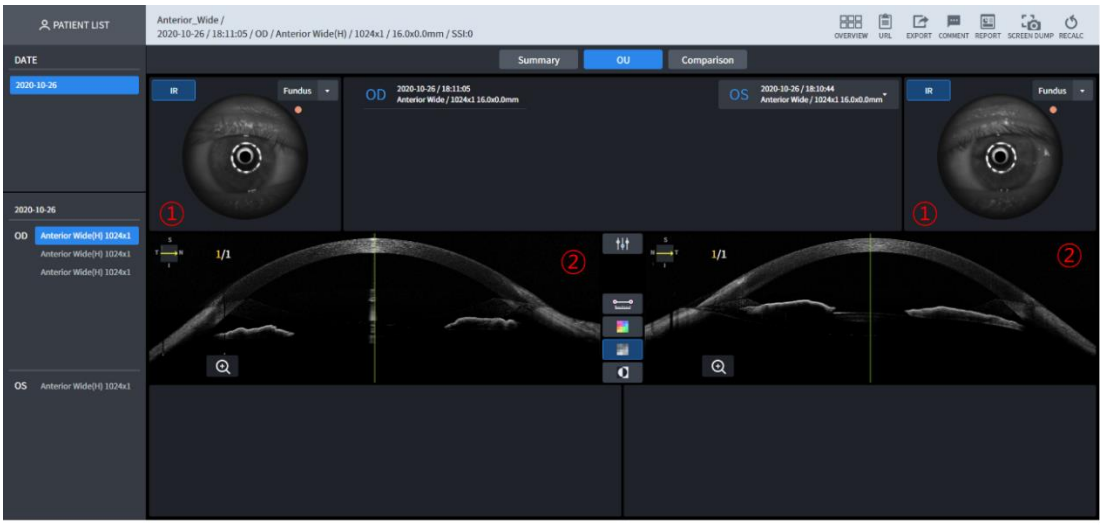


1 Fundus image is displayed. Basically, IR Fundus image is displayed. Scan path is displayed on top of the Fundus image.

2 B Scan image's Brightness / Contrast can be calibrated

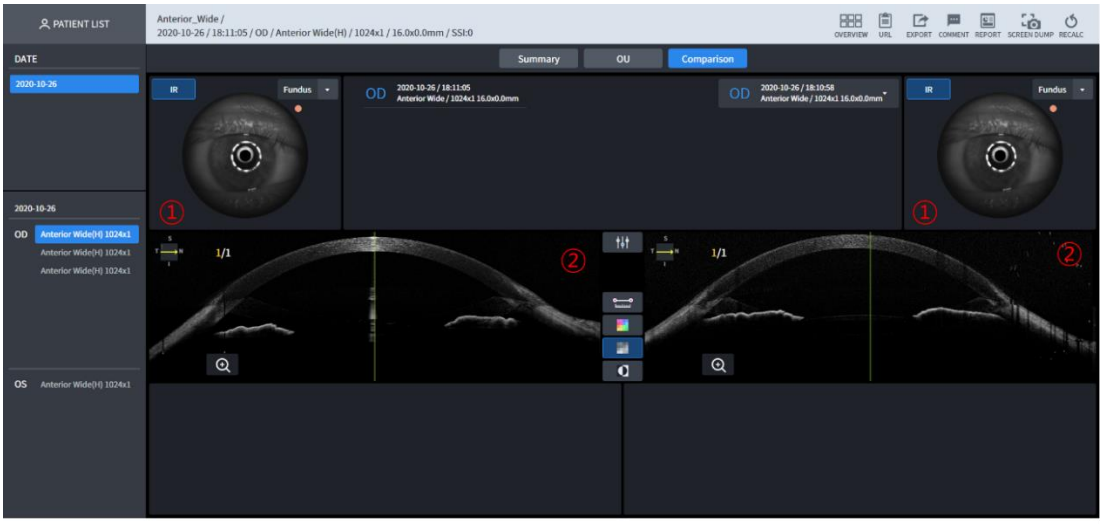
3 Able to display by measuring the angle and length within the B Scan, Color Map Overlay, Monochrome, and by applying Monochrome reverse function.

Anterior Wide Analysis Screen – OU



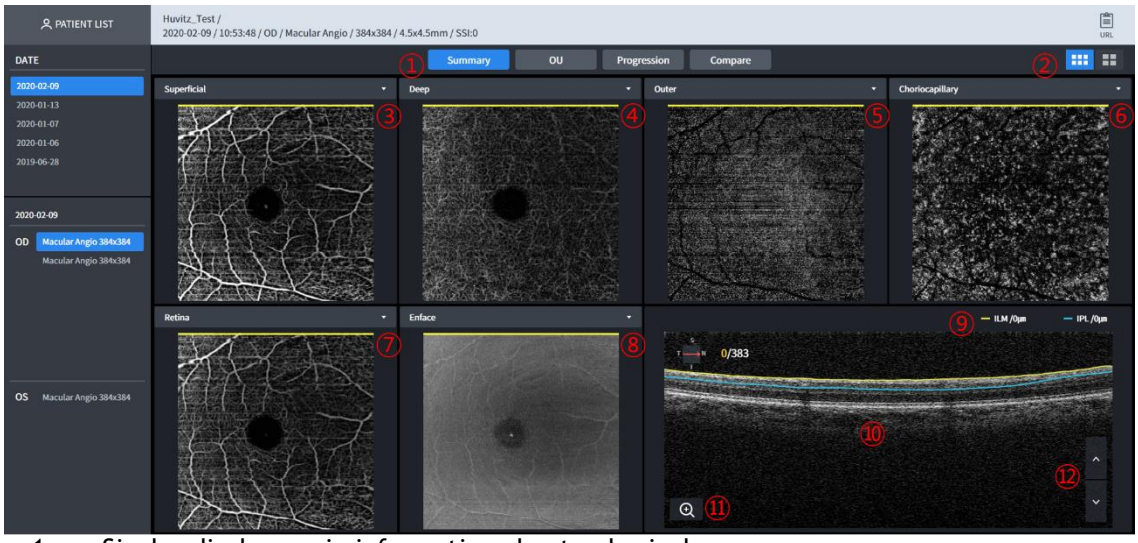
1 Fundus image is displayed. Basically, IR Fundus image is displayed.
2 Bscan for the both eyes are displayed.

Anterior Wide Analysis Screen – Comparison



1 Able to carry out comparative analysis by selecting the list for the measurement of the same part.
2 Function is the same as that of the Anterior Line Analysis Screen – OU.

Angiography Analysis Screen - Summary (1)



1 - Single: display angio information about only single eye.
- OU: display angio information about both of eyes.
- Progression: It is easy to check the progress by comparing the eyes taken over several days.
- Compare: compare angio data from two different days.

2 Choose one between Basic angio map and Detail angio map

3 Select the angiogram in the combo box.
- Custom: Its signal depth is customized by user. As user set the depth range, angiogram is also changed
Superficial: Its signal depth is from ILM(0um) to IPL(0um).

4 Deep: Its signal depth is from IPL (0um) to OPL(0um).

5 Outer: Its signal depth is from OPL(0um) to BRM(0um).

6 Choriocapillary: Its signal depth is from BRM(15um) to BRM(45um).

7 Retina: Its signal depth is from ILM(0um) to OPL(0um).

8 Select the image in the combo box.
- Enface: It represent Enface image.
- Thickness: It represent Thickness map.
- Depth coded map: Choriocapillary, Deep, Outer map is overlapped in this image.

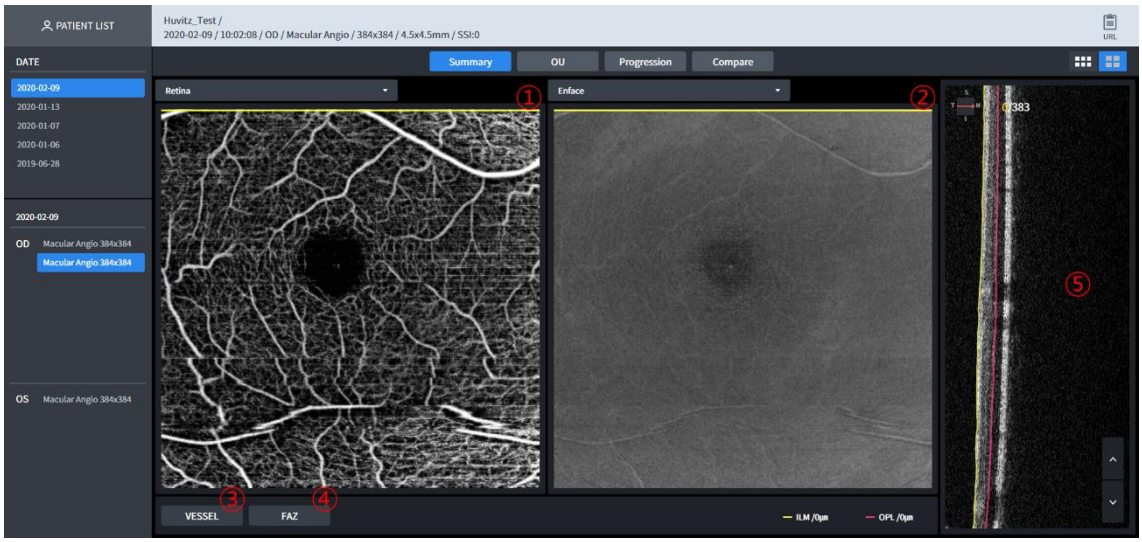
9 Inform the layer&depth of the displayed image.

10 Acquired B-Scan with angiogram. And Tomography can overlap with a red color for a blood probability.

11 Able to amplify and view B-scan image.

12 B Scan image can be subjected to browsing. Animation effect is displayed when pressing on the up/down button.

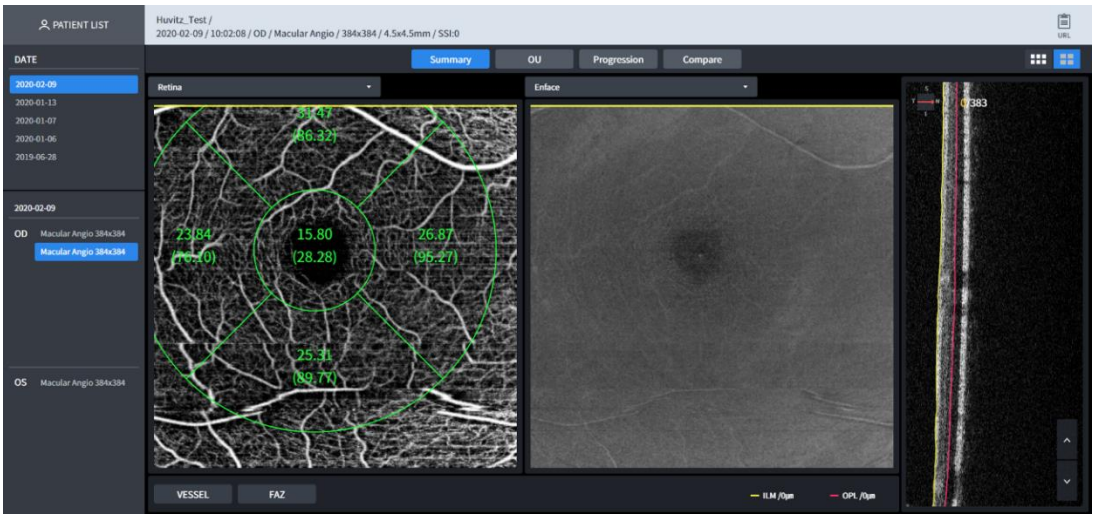
Angiography Analysis Screen - Summary (2)



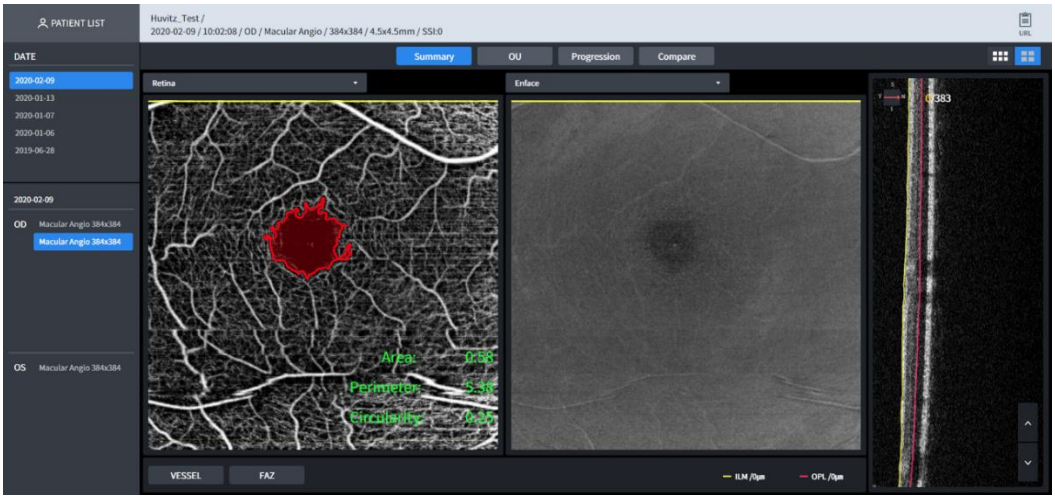
1 Select the angiogram in the combo box.
- Superficial: Its signal depth is from ILM(0um) to IPL(0um).
- Deep: Its signal depth is from IPL (0um) to OPL(0um).
- Outer: Its signal depth is from OPL(0um) to BRM(0um).
- Choriocapillary: Its signal depth is from BRM(15um) to BRM(45um).
- Retina: Its signal depth is from ILM(0um) to OPL(0um).
- Custom: Its signal depth is customized by user. As user set the depth range, angiogram is also changed

2 Select the image in the combo box.
- Enface: It represent Enface image.
- Thickness: It represent Thickness map.
- Depth coded map: Choriocapillary, Deep, Outer map is overlapped in this image.

3 Calculate Blood vessel densities and Flows in each sections.

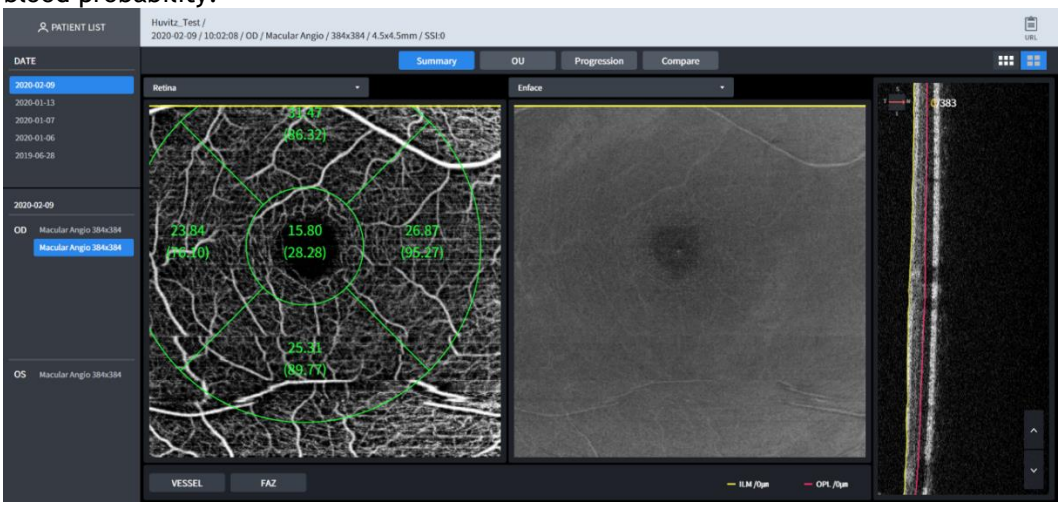


4 Fovea Avascular Zone

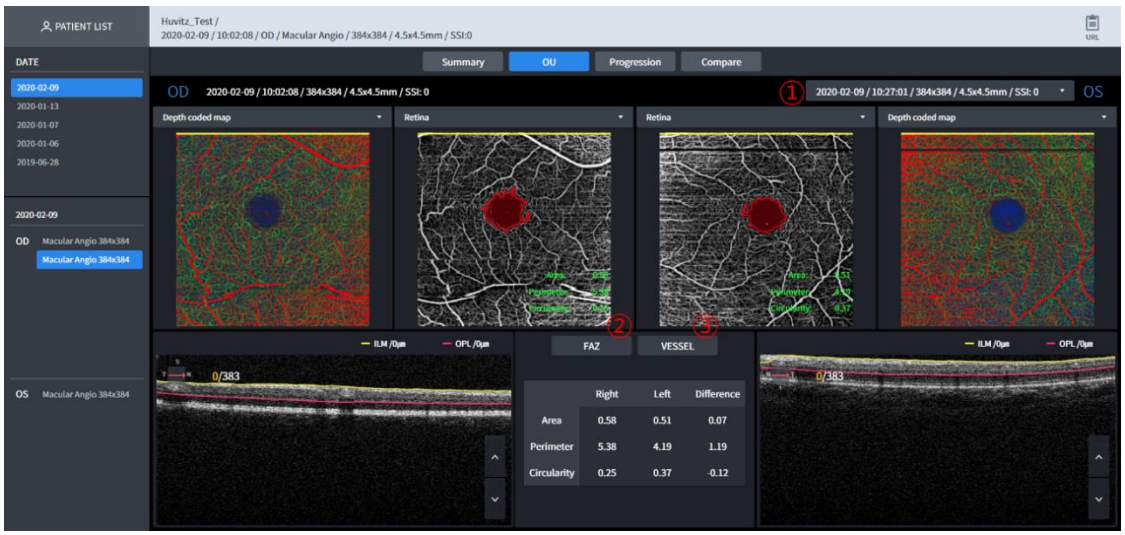


-Area: FAZ area in mm^2.
-Perimeter: FAZ perimeter in mm.
-Circularity: FAZ circularity ratio.

5 Acquired B-Scan with angiogram. And Tomography can overlap with a red color for a blood probability.

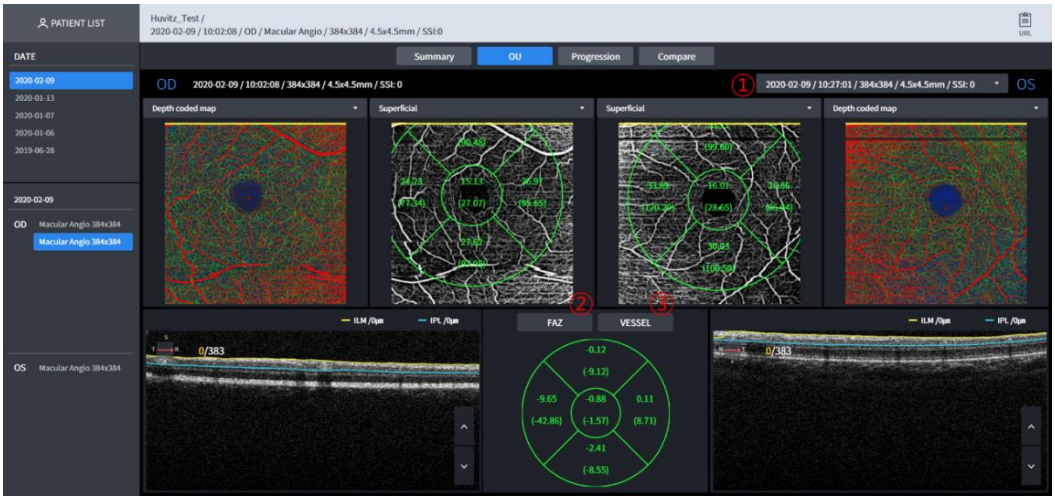


Angiography Analysis Screen – OU

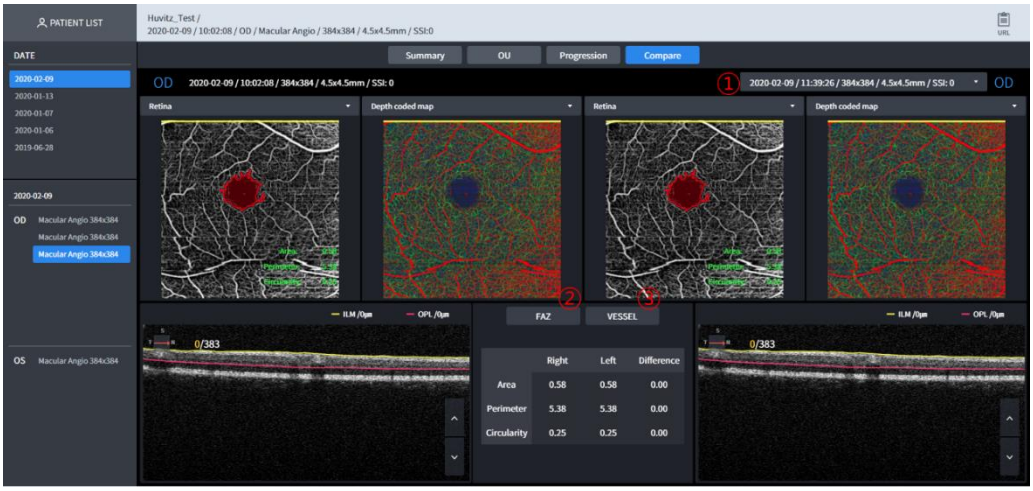


1 Change the standard of single eye.

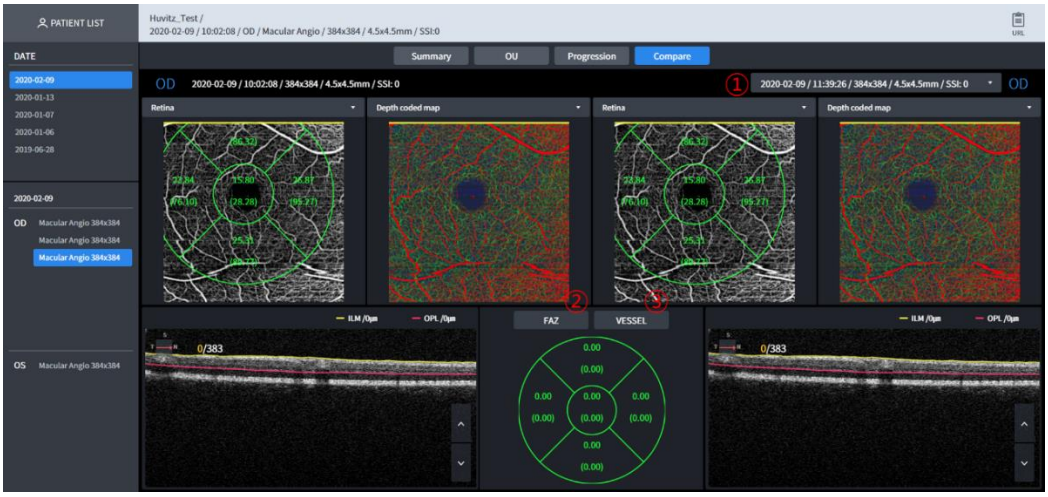
2 FAZ (1) Screen
3 VESSEL



Angiography Analysis Screen – Comparison



1 Change the standard of single eye.
2 FAZ (1) Screen
3 VESSEL

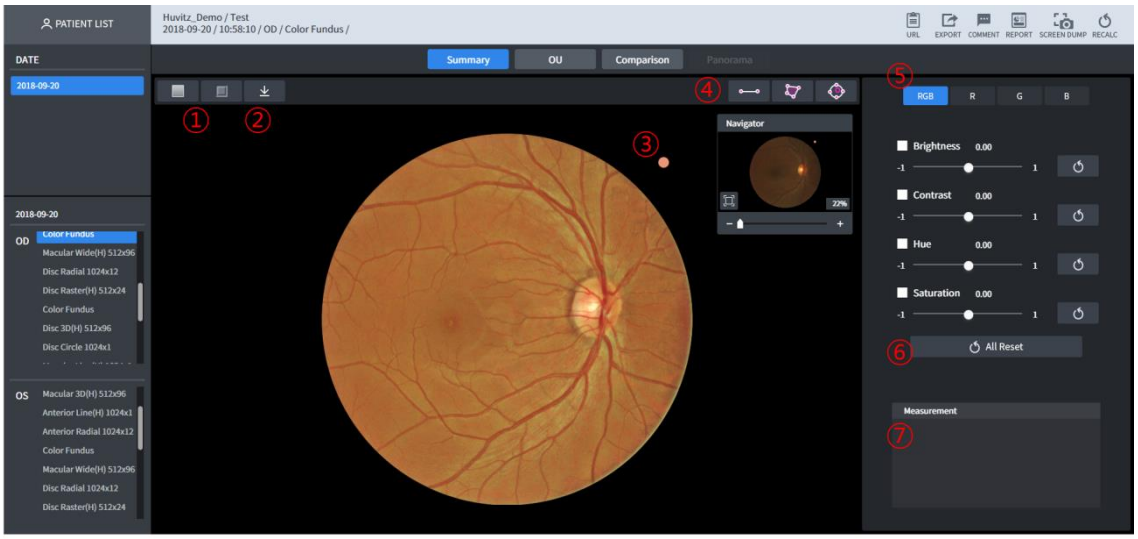


Angiography Analysis Screen – Progression

1 Select data with which you want to compare in the list box.
2 Select data with which you want to compare in the list box.
3 Select data with which you want to compare in the list box.
4 Select the angiogram in the combo box.
- Superficial: Its signal depth is from ILM(0um) to IPL(0um).
- Deep: Its signal depth is from IPL (0um) to OPL(0um).
- Outer: Its signal depth is from OPL(0um) to BRM(0um).
- Choriocapillary: Its signal depth is from BRM(15um) to BRM(45um).
- Retina: Its signal depth is from ILM(0um) to OPL(0um).
- Custom: Its signal depth is customized by user. As user set the depth range, angiogram is also changed

5 FAZ, VESSEL : It shows progression with graph.
6 FAZ Parameter : Area, Perimeter, Circularity

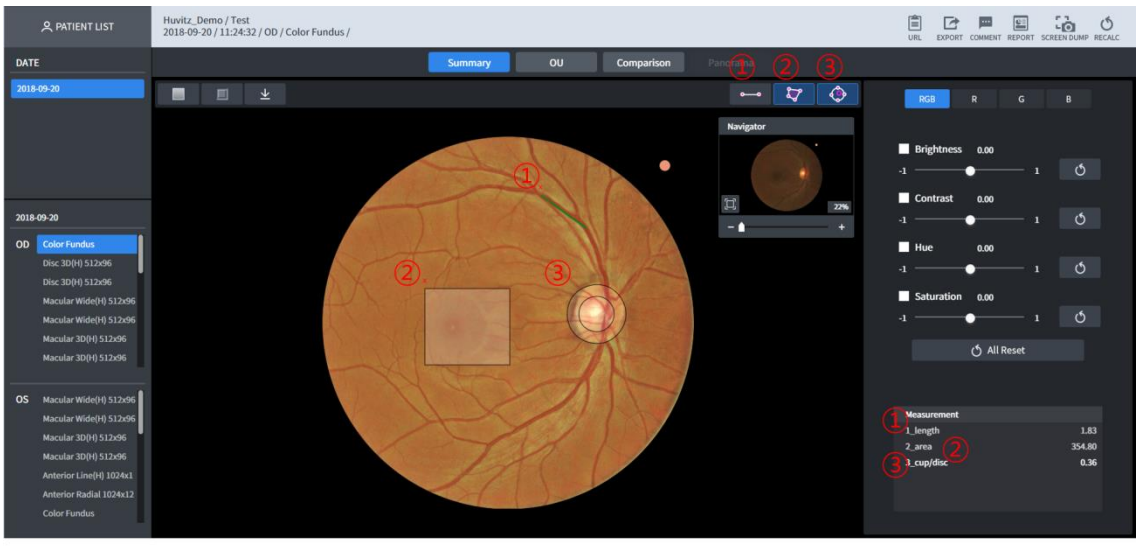
Color Fundus Analysis Screen – Summary (1)



1 Displays on the Fundus image by removing RED color (Red-Free button). Displays on the Fundus image by applying Red-Free and Emboss filter (Emboss button).
2 Download a currently displayed Fundus as jpg
3 Fundus image's reference point is displayed.
4 Length, Area mass, Cup/Disc proportion are measured.
5 Displays on the Fundus image using selected color.
6 User can apply the following values on the Fundus image arbitrarily.
- Brightness: Brightness control
- Contrast: Contrast control
- Hue: Color control
- Saturation: Chroma control

7 Values measured on ④ are displayed.

Color Fundus Analysis Screen – Summary (2)



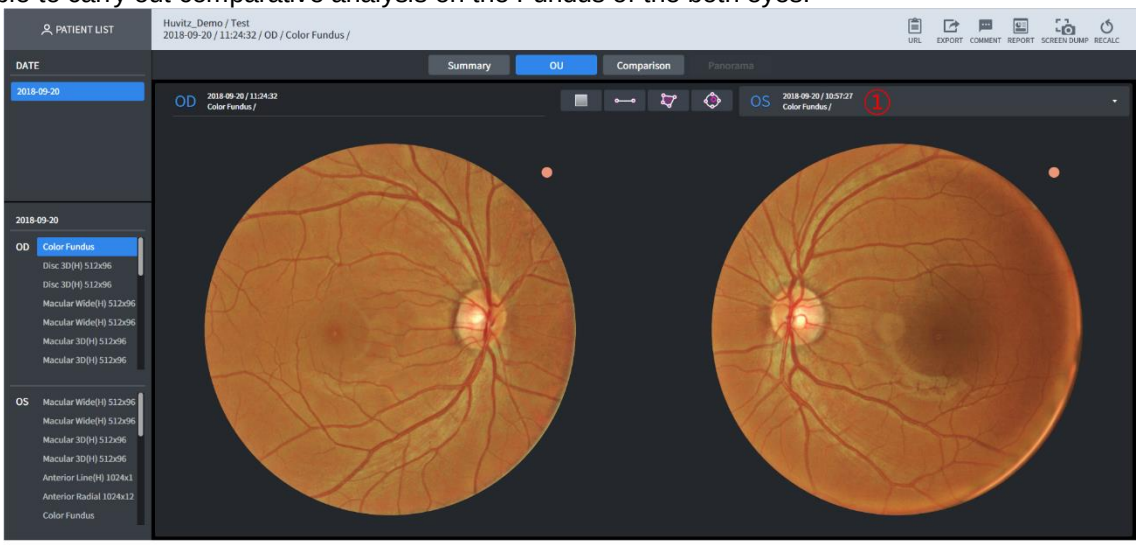
1 Measures the length at the inside of the Fundus. Displays the distance from mouse click to release by measuring the length. Able to calibrate move and length after measurement is completed, by clicking on the measurement point (unit: mm).

2 Measures the area mass at the inside of the Fundus. Displays the distance from mouse click to release by measuring the length. Able to calibrate move and length after measurement is completed, by clicking on the measurement point. When segment is clicked on, point is added, and able to modify into polygon (unit: mm2).

3 When the button is clicked on, two circles are drawn, and move to the Cup/Disc position for measuring diagram takes place. Proportion is measured by calibrating to suit the size.

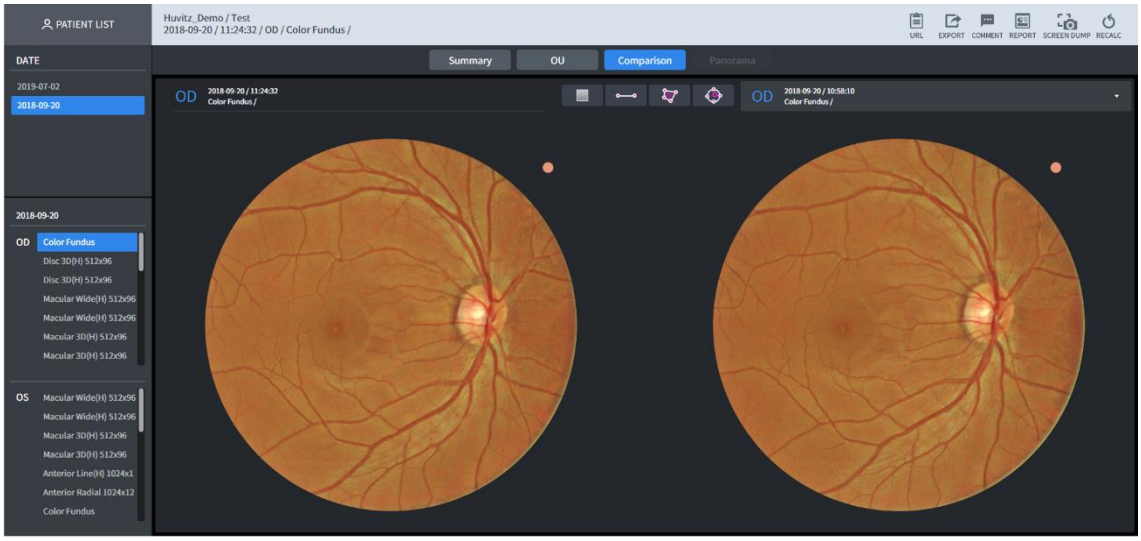
Color Fundus Analysis Screen – OU

Able to carry out comparative analysis on the Fundus of the both eyes.



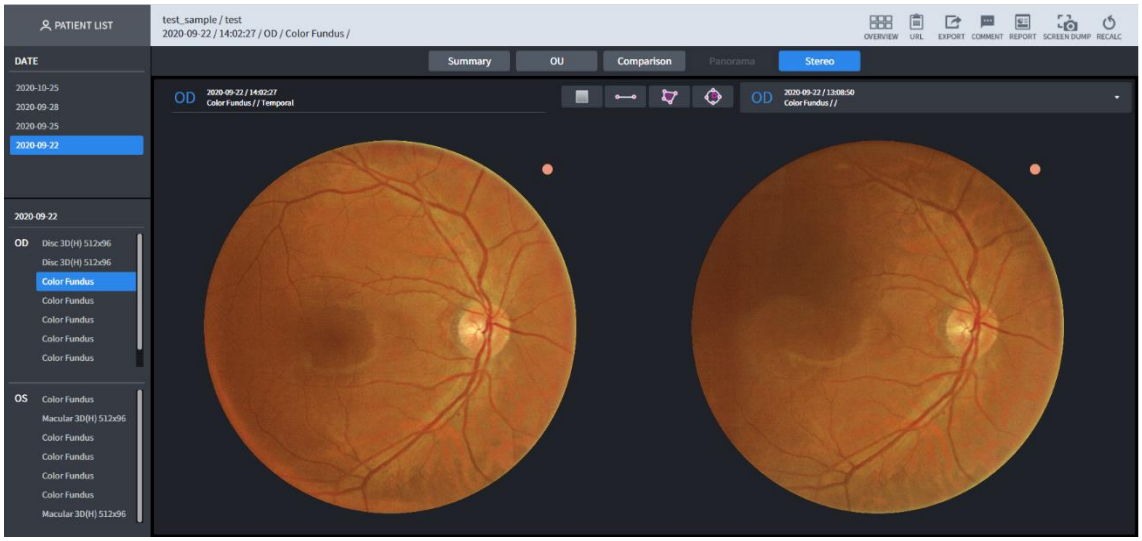
1 Able to carry out comparative analysis by selecting the list on other measurement parts.

Color Fundus Analysis Screen – Comparison



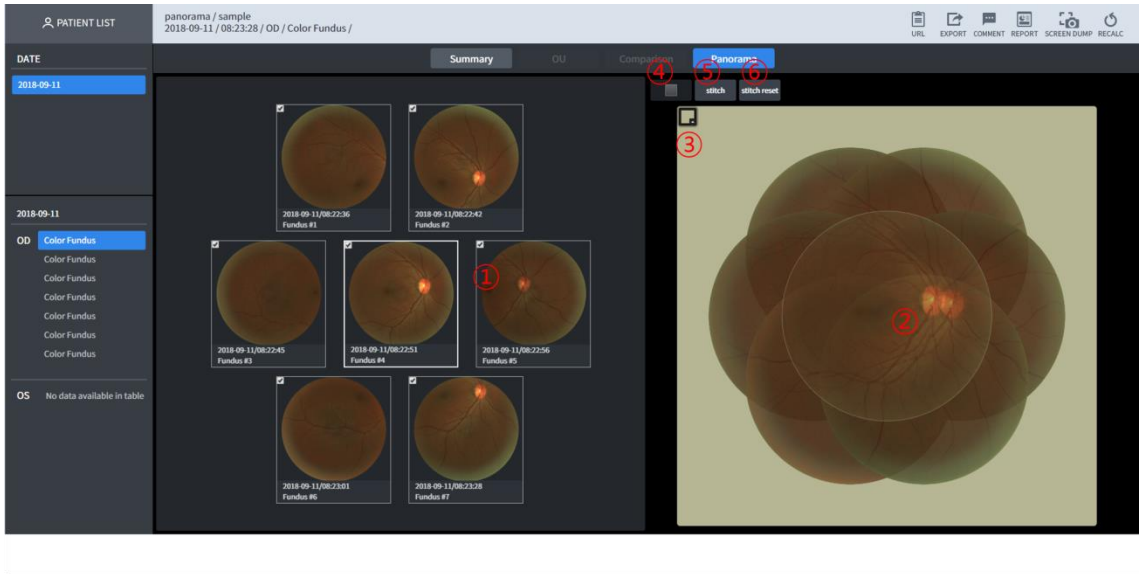
1 Able to carry out comparative analysis by selecting the list on the same measurement parts.

Color Fundus Analysis Screen – Stereo

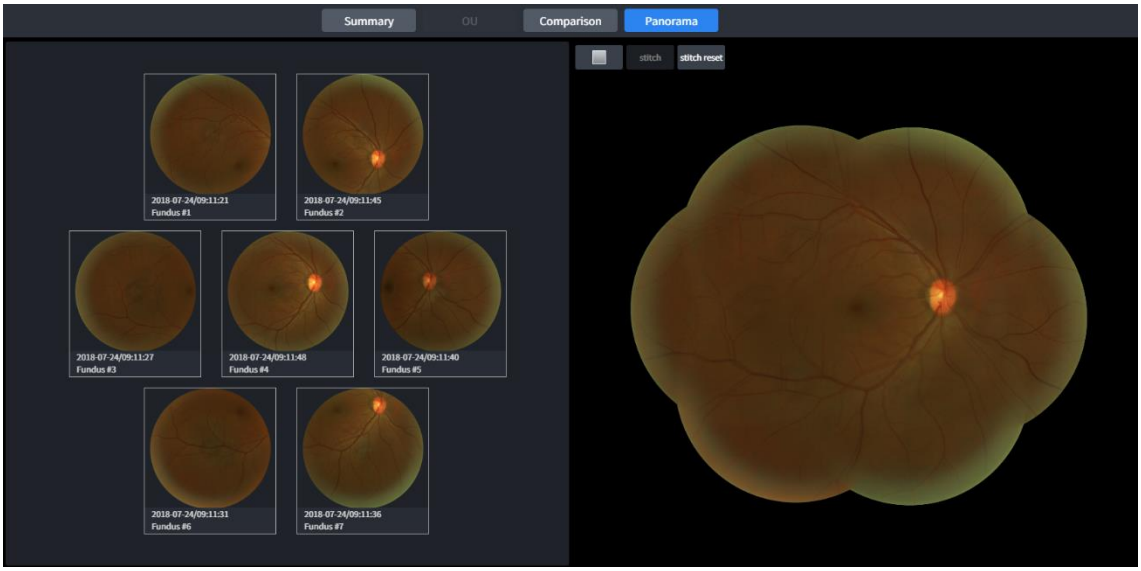


1 Able to carry out comparative analysis by selecting the list on the same measurement parts.

Color Fundus Analysis Screen – Panorama



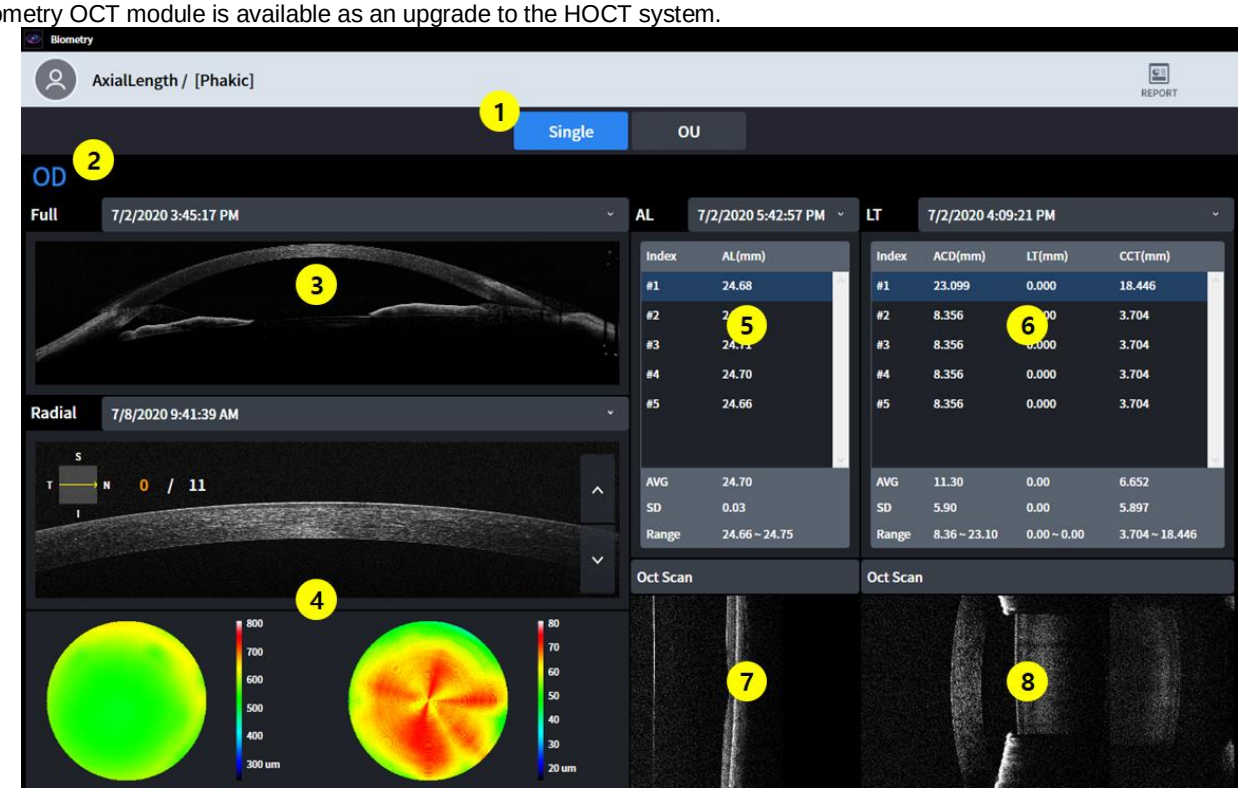
1 Selects the fundus image that is the target for moving. Selected image is displayed on No. 2 domain, and it is displayed slightly more transparent compared to other images.
2 Modify positon by selecting Fundus image.
3 Able to modify background color.
4 Able to apply redfree effect after Stitch is completed.
5 When the stitch button is pressed on after modifying image's position in the No. 2 domain, merged image gets output.



6 Press on the stitch reset button to merge again after modifying the position.

Biometry Analysis screen – Summary

Biometry OCT module is available as an upgrade to the HOCT system.



1 Screen setting
- Single: display Biometry information about only single eye.
- OU: display Biometry information about both of eyes.

2 OD / OS : Indicates which side of eye is showing.

3 Full Anterior : Display the measurement results of the Full Anterior (Bscan)

4 Anterior Radial results : Display the measurement results of the Anterior Radial (Thickness map)

5 Axial Length results : Display the measurement results of the Axial Length (AL)

6 Lens Thickness results : Display the measurement results of the Lens Thickness (ACD, LT, CCT)

7 Axial Length Bscan Image : Display selected Bscan Image in (5)

8 Lens Thickness Bscan Image : Display selected Bscan Image in (6)

Biometry Analysis Screen - OU

1 Axial Length Results (OD) : Display the measurement results of the Axial Length. (OD) (AL)

2 Lens Thickness Results (OD) : Display the measurement results of the Length Thickness. (OD) (ACD, LT, CCT)

3 Full Anterior Results (OD) : Display the measurement results of the Full Anterior(OD) (Bscan)

4 Anterior Radial Results (OD) : Display the measurement results of the Anterior Radial (OD) (Thickness map)

5 Axial Length Results (OS) : Display the measurement results of the Axial Length. (OS) (AL)

6 Lens Thickness Results (OS) : Display the measurement results of the Length Thickness. (OS) (ACD, LT, CCT)

7 Full Anterior Results (OS) : Display the measurement results of the Full Anterior(OS) (Bscan)

8 Anterior Radial Results (OS) : Display the measurement results of the Anterior Radial(OS) (Thickness map)

Topography Analysis Screen - Summary

1 Information : Display basic information for exam.

2 Basic/Detail Display : Choose one between Basic Topography map and Detail Topography map

3 Topography map : Display Topography map.

4 Cornea View : Display Cornea Image.

5 Summary Table : Display Summary data table for analysis.

6 Bscan Image : Display Bscan for Topography.

Topography Analysis Screen - Detailed

1 Basic/Detail Display : Choose one between Basic Topography map and Detail Topography map.

2 Topography map : Display Topography map.

3 Summary Table : Display Summary data table for analysis.

4 Change unit : Change the unit of curvature data.

5 Change unit scale : Change the unit scale of the data.

6 Change overlay display : Change the overlay display item

Topography Analysis Screen - OU

1 Data list box: Select data to compare in the list box.

2 Topography Map (OD) : Display Topography map. (OD)

3 Topography Map (OU) : Display Topography map. (OU)

4 Summary list box : Select summary table to compare in the list box.

5 Difference : Display comparative data.

Topography Analysis Screen - Comparison

1 Information : Display basic information for exam.

2 Data list box : Select data to compare in the list box.

3 Topography map : Display topography map of the selected exam.

4 Difference map : Display the difference in topography map between the selected and the compared exam.

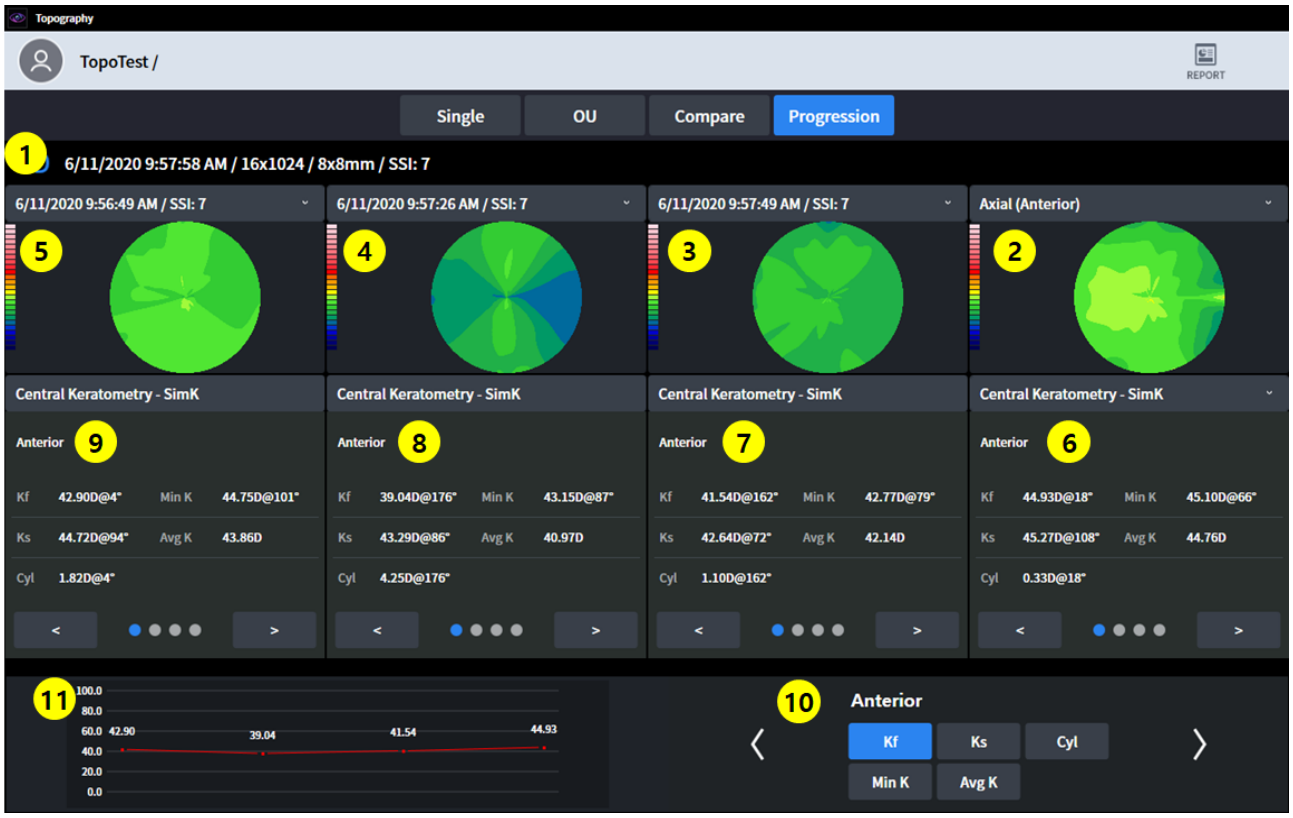
5 Topography map : Display topography map of the compared exam.

6 Summary Table : Display selected exam's summary data table for analysis.

7 Difference Summary Table : Display the difference between selected exam with compared exam.

8 Summary Table : Display compared exam's summary data table for analysis.

Topography Analysis Screen - Progression



1 Information : Display basic information for exam.

2 Topography map : Display topography map of the selected exam.

3 Topography map (1) : Display topography map of the compared exam.

4 Topography map (2) : Display topography map of the compared exam.

5 Topography map (3) : Display topography map of the compared exam.

6 Summary Table : Display selected exam's summary data table for analysis.

7 Summary Table (1) : Display compared exam's summary data table for analysis.

8 Summary Table (2) : Display compared exam's summary data table for analysis.

9 Summary Table (#) : Display compared exam's summary data table for analysis.

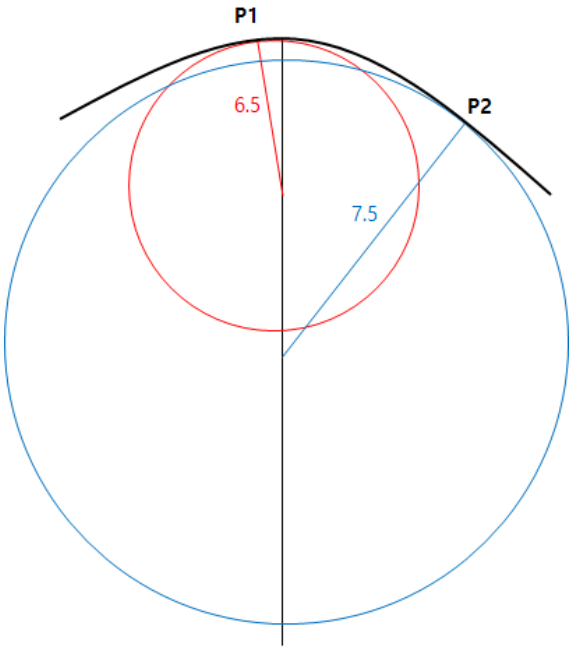
10 Graph setting : Select the analysis data to be displayed on the graph.

11 Summary Graph : Display selected data in (10).

1. Topography map

I. Axial map

- This map is useful for understanding the overall curvature distribution of the cornea.
- Calculate the vertical distance from the corneal surface to the central optical axis as the radius of curvature.
- The radius of curvature always ends at the central optical axis.



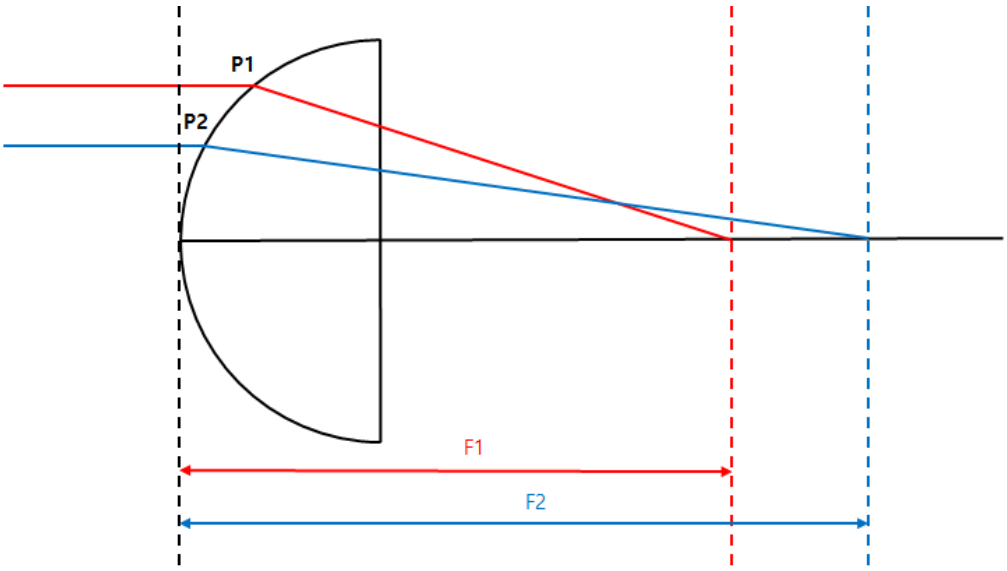
- For example, the curvature of points P1 and P2 on the measurement surface is 6.5 and 7.5, respectively.
- Also known as sagittal map.

II. Tangential map

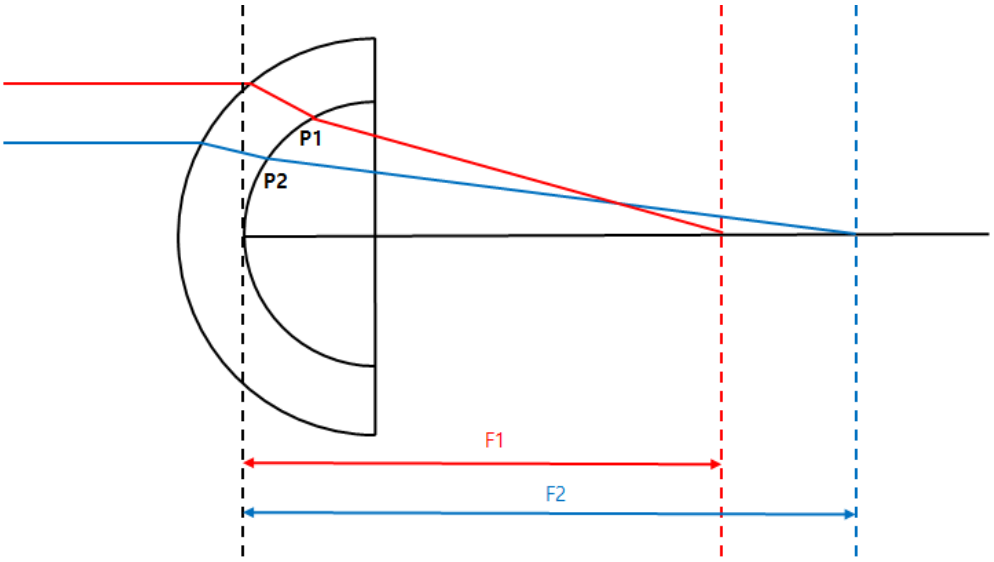
- This map is useful for understanding the partial curvature changes of the cornea.
- Calculate the instantaneous curvature of each position independent of the central optical axis.
- A more accurate curvature value can be identified for a particular position. But noise can occur as sensitive to change.

III. Refractive Power

- This map displays the refractive power of the cornea.
- Calculate the curvature using the Focal Length obtained by Snell's law.



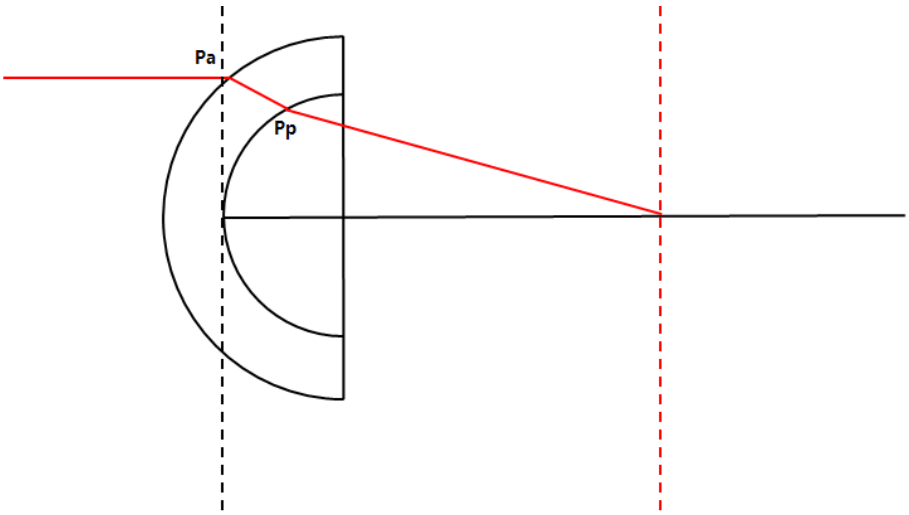
- Kerato map and Axial map display curvature of the front and use the Refractive index 1.3375 and 1.3376, respectively.
- Posterior map displays the rear curvature.



- Total map uses a ray tracing technique that tracks the movement of light through the cornea. The most accurate refractive power can be calculated by considering the slope of the anterior and posterior cornea, the thickness of the cornea, the difference in refractive index between the air and the corneal tissue and the vitreous body.

VII. Net Power

- This map displays the refractive power of the cornea.
- Total refractive power is the sum of the front and rea refractive power. The refractive power uses the curvature obtained by sagittal method.
- Use corneal index (1.376) for front refractive power calculations and Vitreous index(1.336) for rear refractive power calculations.



- If the path of incident light is the same as shown above, the Net Power at point Pa is [Reflection at Pa + Reflection at Pp].

VIII. Axial True Net

- This map displays the refractive power of the cornea.
- Calculate the total refractive force by considering the lens thickness and the refractive power at the front and rear. The refractive power uses the curvature obtained by sagittal method.
- Use corneal index (1.376) for front refractive force calculations and Vitreous index (1.336) for rear refractive force calculations.

IX. Equivalent Keratometer

- This map displays the refractive power of the cornea.
- Use a typical anterior and posterior corneal curvature ratio (0.822) and a simulated curvature ratio (0.8976).
- Equivalent Keratometer is designed to identify corneal refractive power in corneal surgery patients.

X. Elevation

- Assume the ideal circle that best fits the measured corneal data and calculate the difference between that circle and the measured data to make a map.

XII. Height

- Calculate the height difference between each part of the cornea and the cornea peak to make a map.

XIII. Pachymetry

- Calculate the thickness of the cornea to make a map.

XIV. Epithelium

- Calculate the thickness of the Epithelium to make a map.

2. Topography Analysis Data

I. Central Keratometry - SimK

- Displays the simulated Keratometry value of the central area(3mm)
- Calculate based on Axial map data.

II. Keratometry (Meridian)

- Meridian(bidirectional) Astigmatism information by area(3mm, 5mm, 7mm) is displayed.
- The minor axis(Ks) is determined in the direction vertical to the major axis(Kf).
- Calculate based on Axial map data.

III. Keratometry (SemiMeridian)

- Semi-Meridian(unidirectional) Astigmatism information by area(3mm, 5mm, 7mm) is displayed.
- Calculate the minor axis(Ks) and the major axis(Kf) and the major axis(Kf) is calculated for the right and left side of the eye, respectively.
- Calculate based on Axial map data.

IV. Keratoconus screening

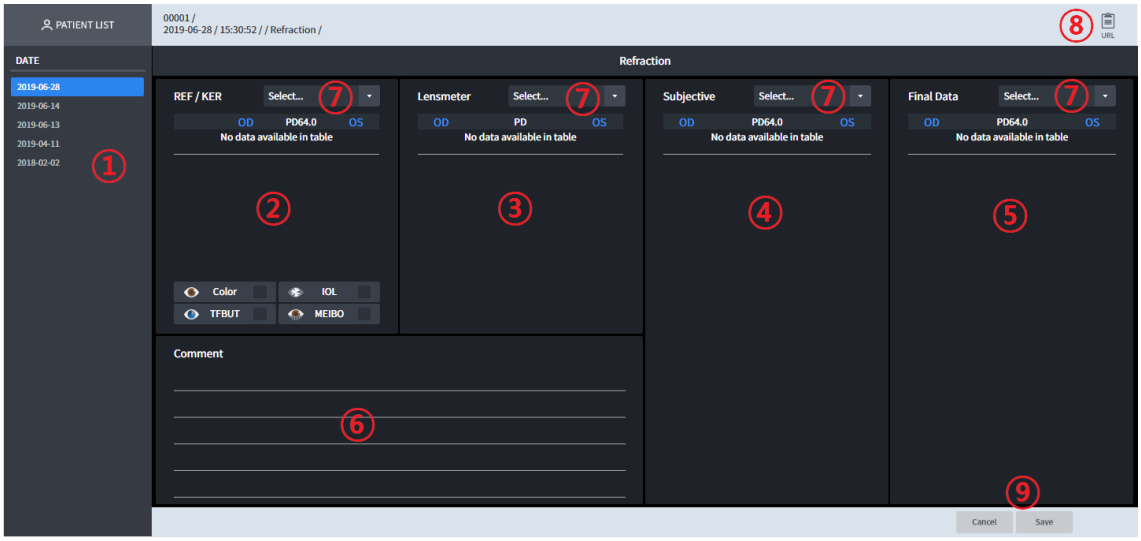
- Analyze information that can be used as a reference for conical cornea diagnosis.
- Keratoconus Prediction Index
  - The following index information is analyzed to predict and display the probability of conical cornea.
- Keratoconus
  - Analyze KPI and the following index information to predict and display the corneal condition.
- Surface Asymmetry Index
  - For all locations on the map, the average value of the difference in refractive power form the opposite point is displayed.
- Differential Sector Index
  - Divide the entire area into 8 sectors according to the direction and calculate the average power of each sector.
  - Display the difference by taking the two values with the most difference of them.
- Opposite Sector Index
  - Divide the entire area into 8 sectors according to the direction and calculate the average power of each sector.
  - Display the most difference by compared with the value in the opposite direction.
- Central/Surrounding Index
  - Divide the entire area into a central area and an outer area and calculate the average power of each area.
  - Display the difference between the two values.
- Irregular Astigmatism Index

- Display as a numerical value After calculating the difference between each ring and the surrounding ring.

V. Pachymetry

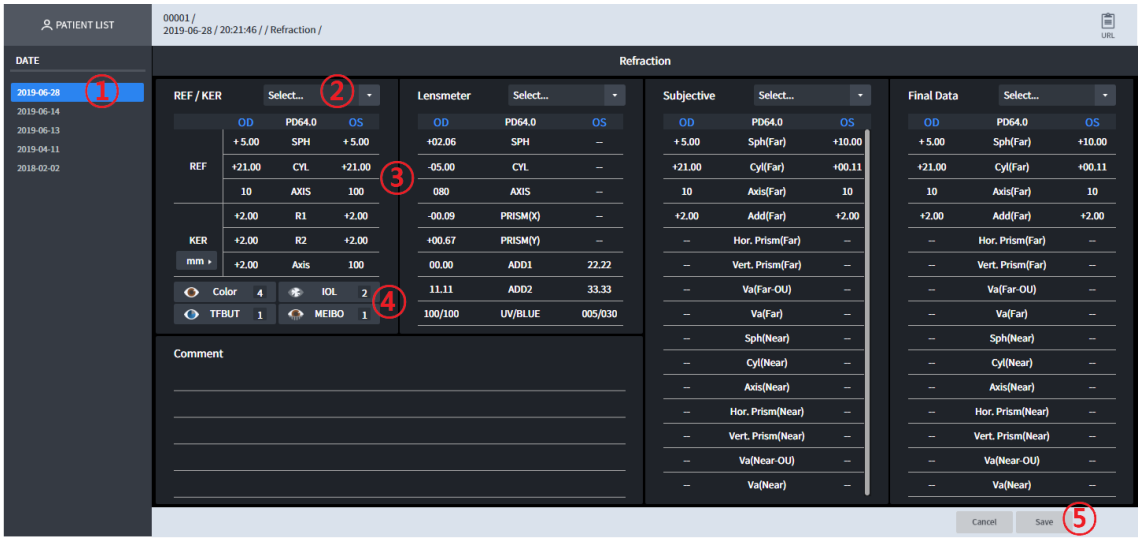
- Display thickness information of cornea.

Refraction Screen Overview

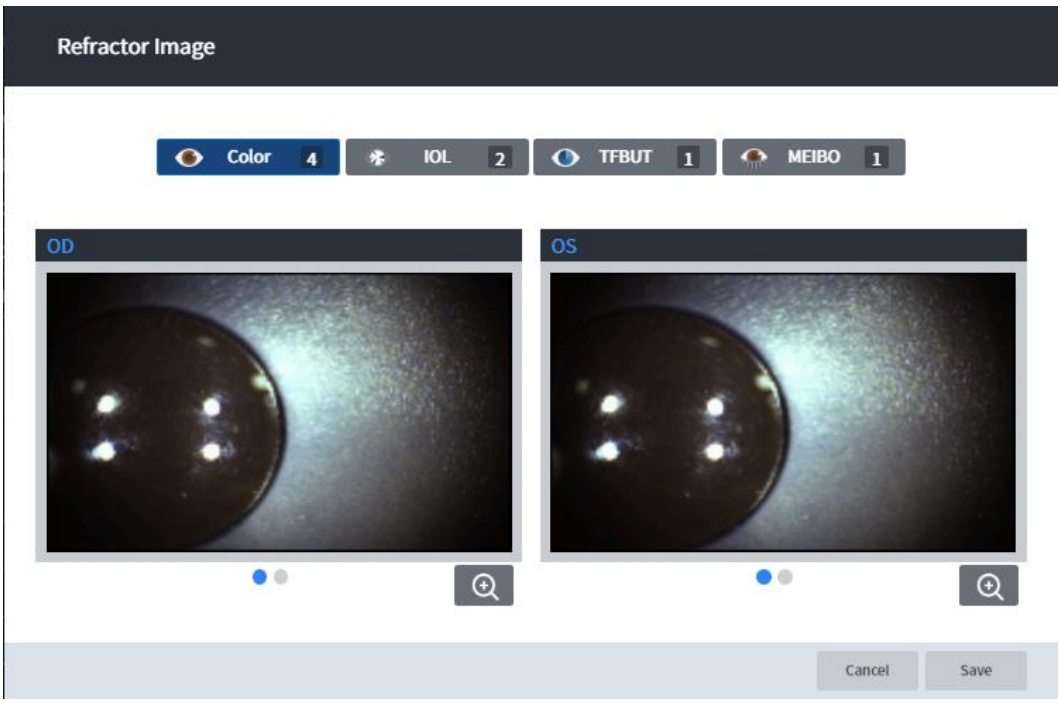


1 Indicates the dates for the current patient's examination history.
2 Indicates measurement data for both eyes. By popup, can check Color, IOL, TFBUT and MEIBO image.
3 Indicates measurement date of Lensmeter for both eyes.
4 Indicates measurement date of subjective both eyes.
5 Based on the values adjusted during the measured, the final measurement data for both eyes are displayed.
6 Displays the screen where Comment can be input.
7 It displays measurement result from server in descending order. When choosing one from the list, it displays below.
8 URL that can move immediately to the current inspection is copied
9 Save or cancel the imported measurement data

Refraction Analysis Screen

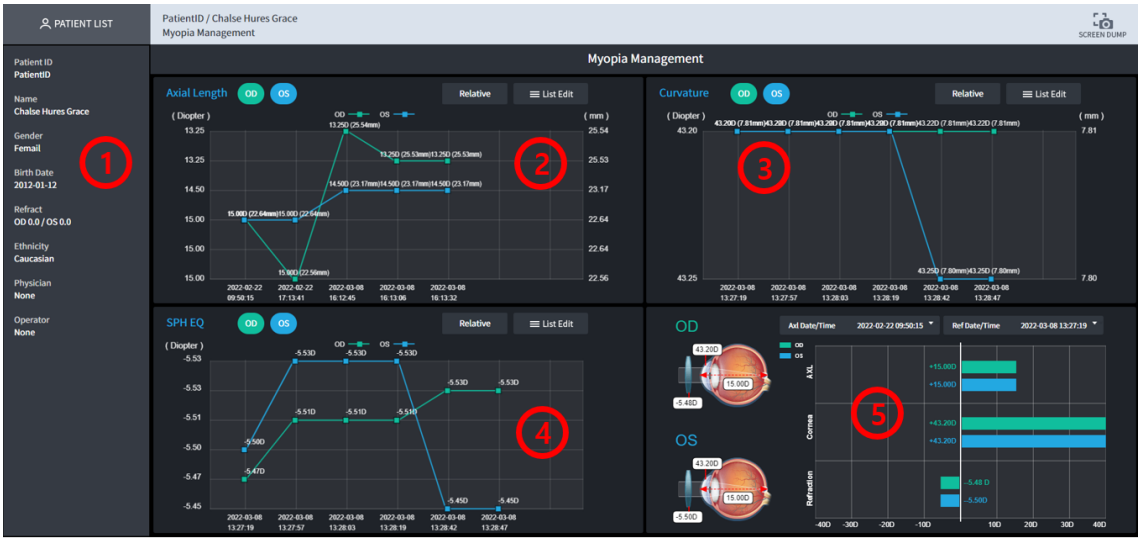


1 It creates the latest measurement data for the selected patient.
2 Click the list button to import patient's measurement data
3 Confirm the measurement data.
4 Confirm Color, IOL, TFBUT, MEIBO values if REF/KER data exists. The numbers besides Color, IOL, TFBUT, MEIBO displaying on Refractor Image, indicate number of images for each examination. By click the button, it shows a image.



5 Save all measurement data

Overview of Myopic Management Analysis Screen



1. Display patient information.

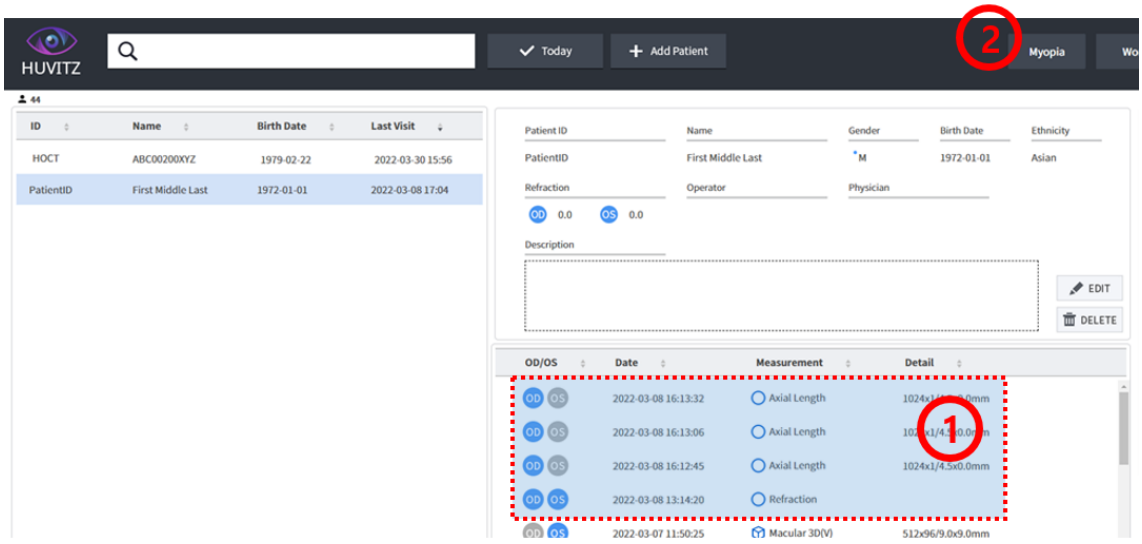
2. It shows the Axial Length (AL) data of the right eye (OD) and left eye (OS) by date in a graph.

3. The graph shows the average curvature data of the right eye (OD) and left eye (OS) by date.

4. It shows the SPH EQ data of the right eye (OD) and left eye (OS) in a graph by date.

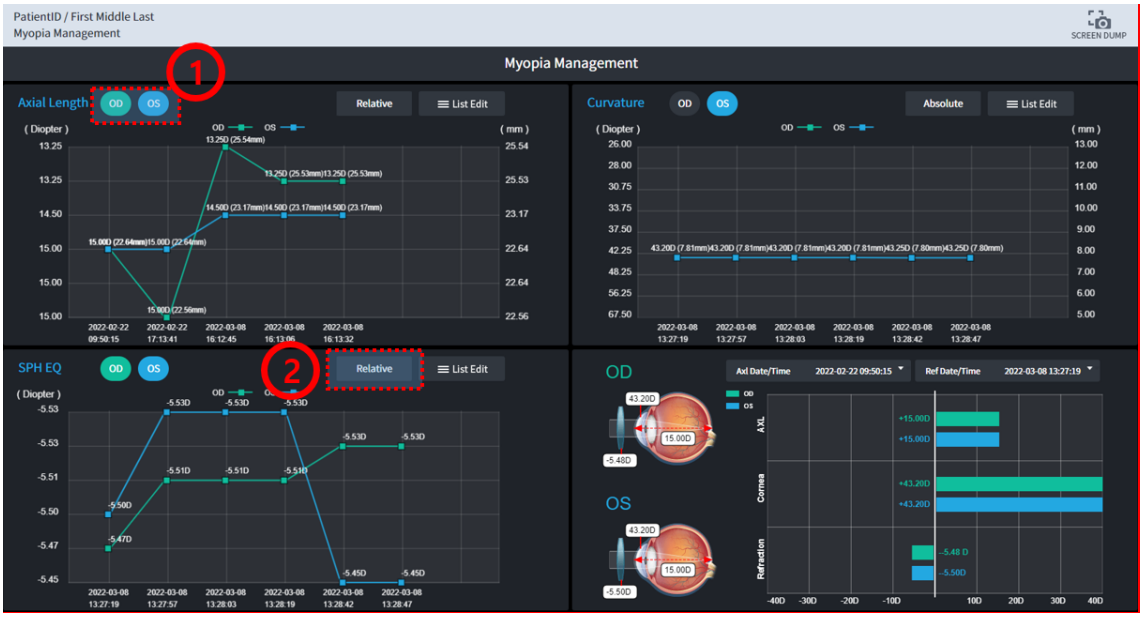
5. It shows the AL, curvature, and SPH EQ data of the right eye (OD) and left eye (OS) for a specific date at once.

How to use the Myopia Management Analysis Screen



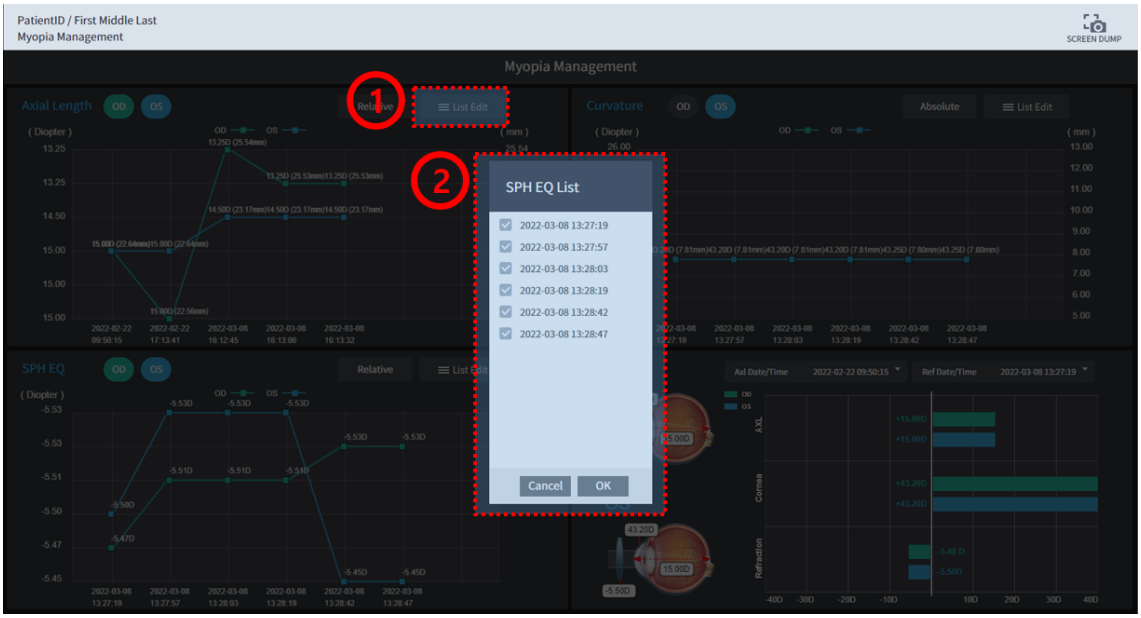
1. Receive Axial Length and Refraction or Topography measurement data from the device.

2. If you select a patient with Axial Length, Refraction, and Topography measurement data, A button called “Myopia” is created on the upper left.
Click the “Myopia” button to enter the myopia management analysis screen.



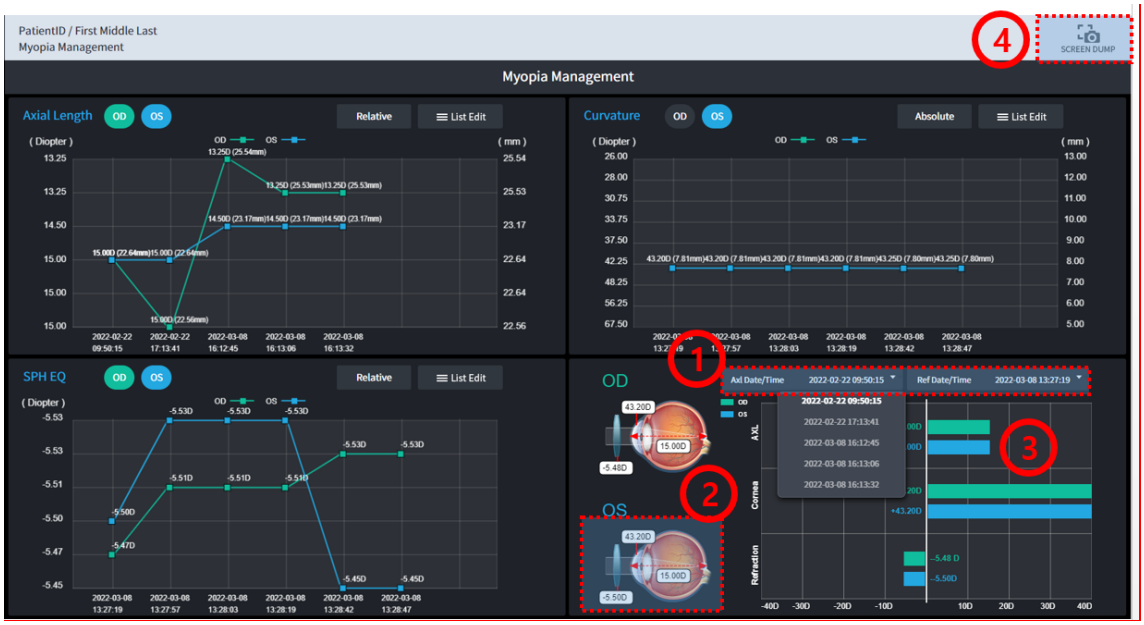
1. Click “OD” button to show/hide right eye data.
You can show or hide the left eye data by clicking the “OS” button.

2. Information of graph data can be displayed as Absolute and Relative.
If the information of data by date is similar, it is easier to check it with Relative.



1. Click the “List Edit” button to select the date you want to check.

2. If you click the List Edit button, a pop-up window that displays the patient's measurement data list by date appears. Select the date you want to check from the list pop-up window and click the “OK” button to apply it to the graph.

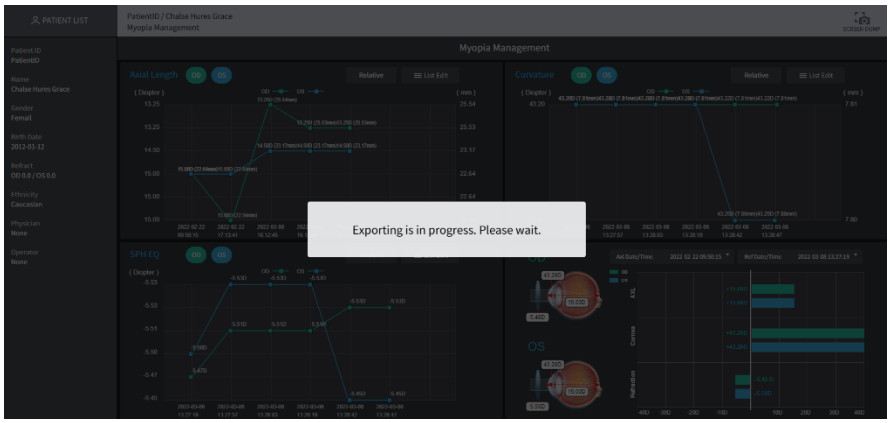


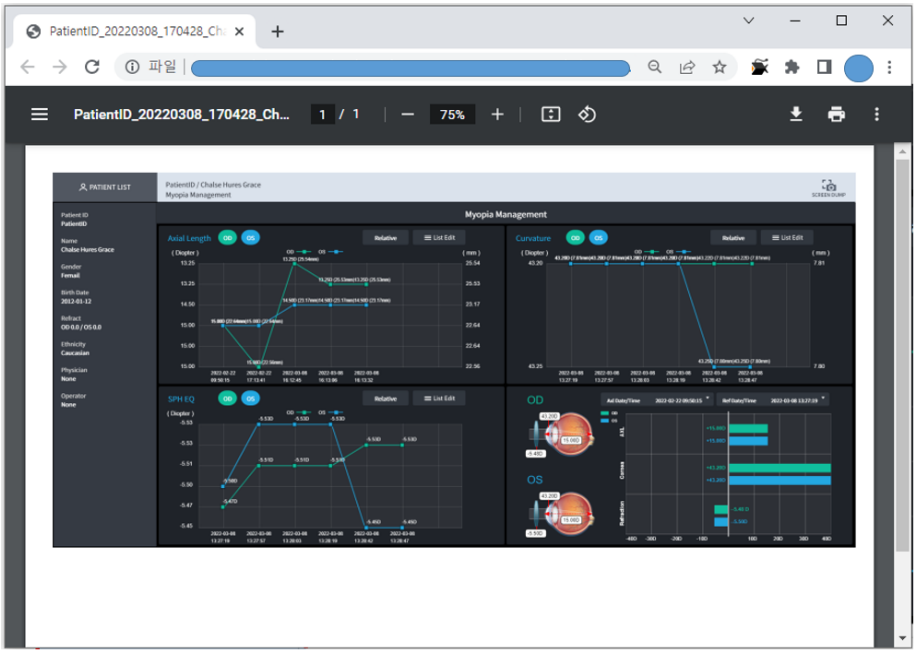
1. Open the two list combo boxes and select the measurement date of the data you want to check.

2. If you select the measurement date of the data you want to check, it confirms which part of the eye the information corresponds to.

3. If you select the measurement date of the data you want to check, the relevant information is classified into right eye (OD) and left eye (OS) and displayed in a graph. The right eye (OD) is shown in green and the left eye (OS) is shown in blue.

4. Captures the current screen and creates a PDF file.





After operation

1. HIIS-1 program does not provide an exit button within the program.
2. Click the ‘X’ button in the web browser to close the program.
3. The program will be automatically logged out

Trouble Shooting Guide

Should the device function improperly, attempt to correct the problem according to the following table before contacting sales distributors.
Contact a sales distributor after turning off the power when the device does not resume normal operation even after taking the following measures.

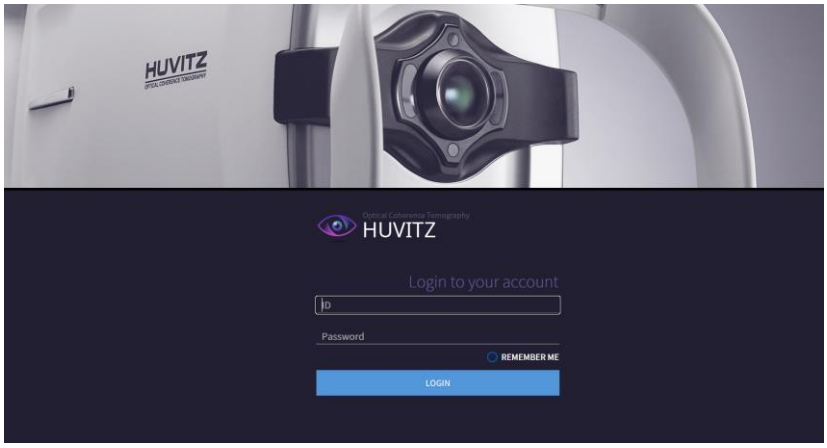
Problem	Cause	Solution
Port number duplicated	PostgreSql is already installed	Uncheck PostgreSql when installing the HIIS-1

	A previous version of HIIS-1 is already installed	Delete the previous version and install the latest version
No data is transmitted to HIIS-1 server	Huvitz's equipment and server are not networked	Check that the Huvitz's equipment and HIIS-1 server are on the same network
	IP of HIIS-1 server is not correct.	Check the IP of HIIS-1 server is entered correctly on Huvitz's equipment.
Cannot access from HIIS-1 client to HIIS-1 server	HIIS-1 server and HIIS-1 clients are not networked	Check that the HIIS-1 server and HIIS-1 clients are on the same network
	IP of HIIS-1 server is not correct.	Check the IP of HIIS-1 server is entered correctly on HIIS-1 clients
No data displayed	Data transfer error	Transfer Data to HIIS-1 server again

4 Import Cannon fundus Data (EyeScape)

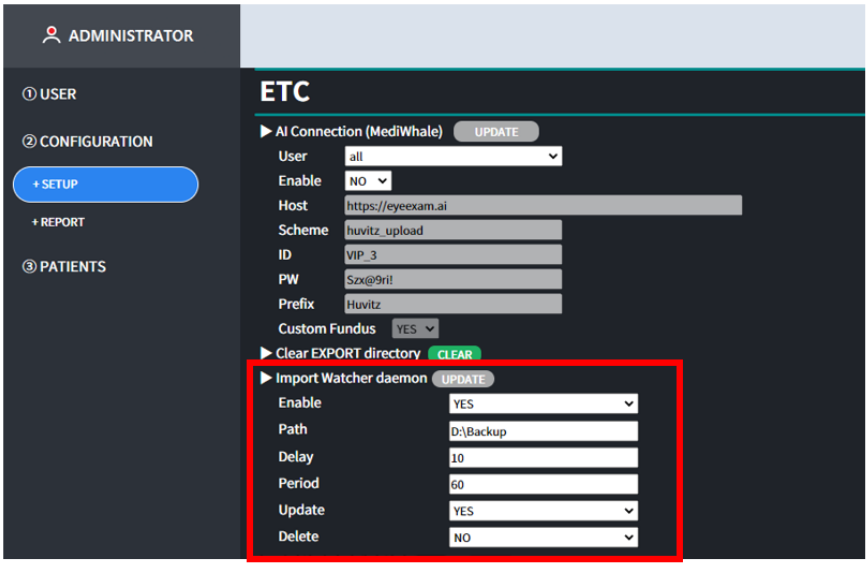
■ Import Watcher daemon

1. After running a browser (Chrome is recommended) on the PC, connect to HIIS.



2. After entering your ID and password, click the LOGIN button to log in.
3. On the ADMINISTRATOR screen, click [CONFIGURATION] / [SETUP] to move to the SETUP screen.
4. Enter and set appropriate values in the "Import Watcher daemon" field.

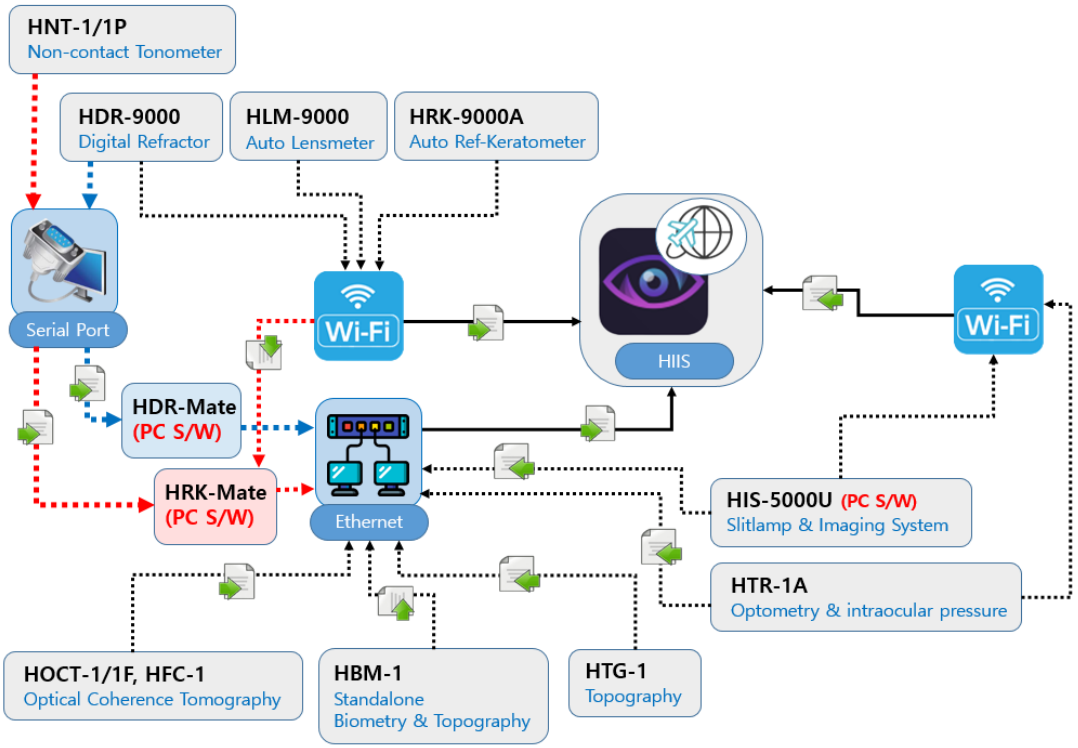
* EyeScape is a measurement data viewer program in Canon equipment.
* You can import patient and Fundus data from EyeScape program.



- Enable : If YES, the data is imported from the EyeScape program according to the set values.
- Path : This is the storage path where data is saved in the EyeScape program.

5 Huvitz's equipment connection diagram

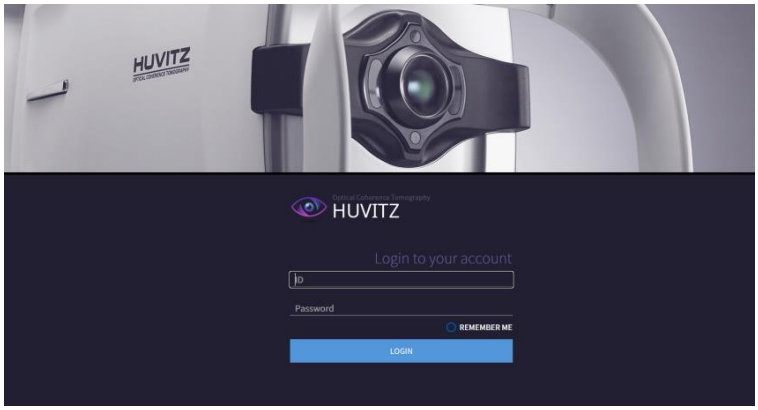
■ Huvitz's equipment connection diagram



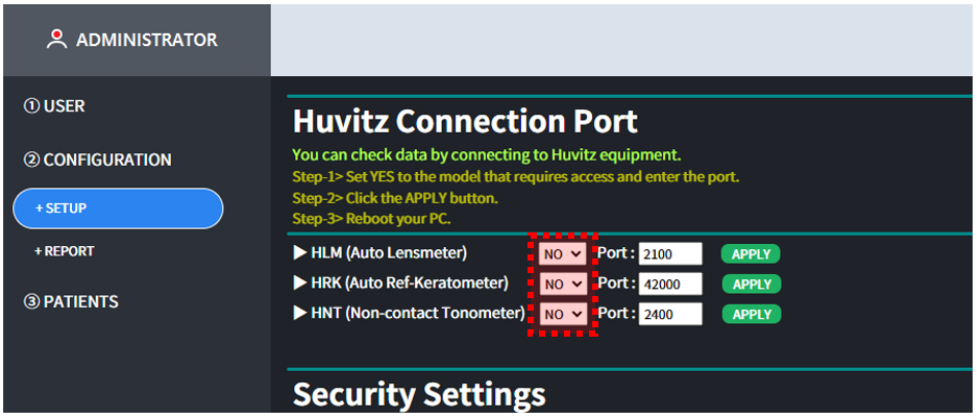
6 Setting method for device connection

■ HIIS (v2.3.0) HUVITZ Integrated Image Server

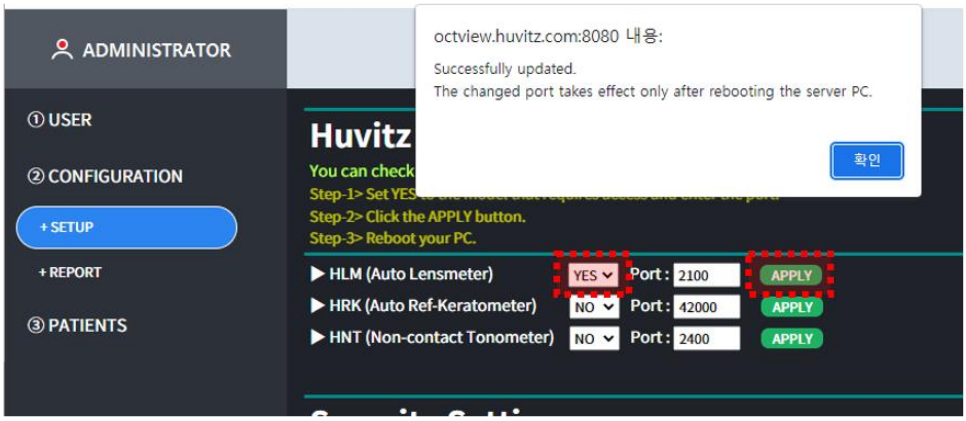
1. After running a browser (Chrome is recommended) on the PC, connect to HIIS.



2. After entering your ID and password, click the LOGIN button to log in.
3. On the ADMINISTRATOR screen, click [CONFIGURATION] / [SETUP] and set the value for the equipment that needs to be connected among the "Huvitz Connection Port" items.



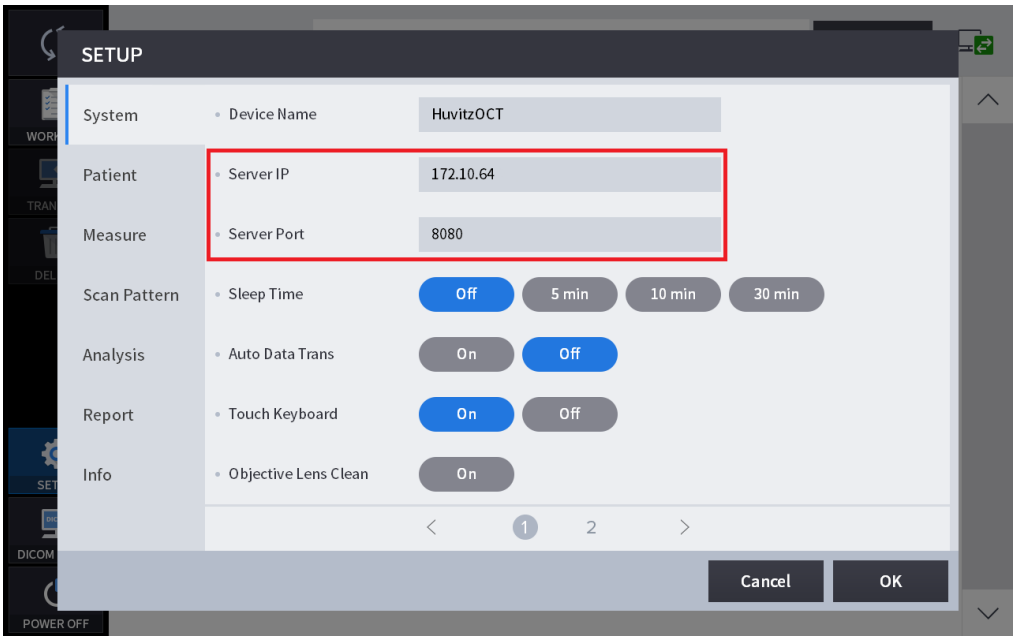
4. If the device that needs to be connected is HLM, change NO to YES and click the APPLY button.



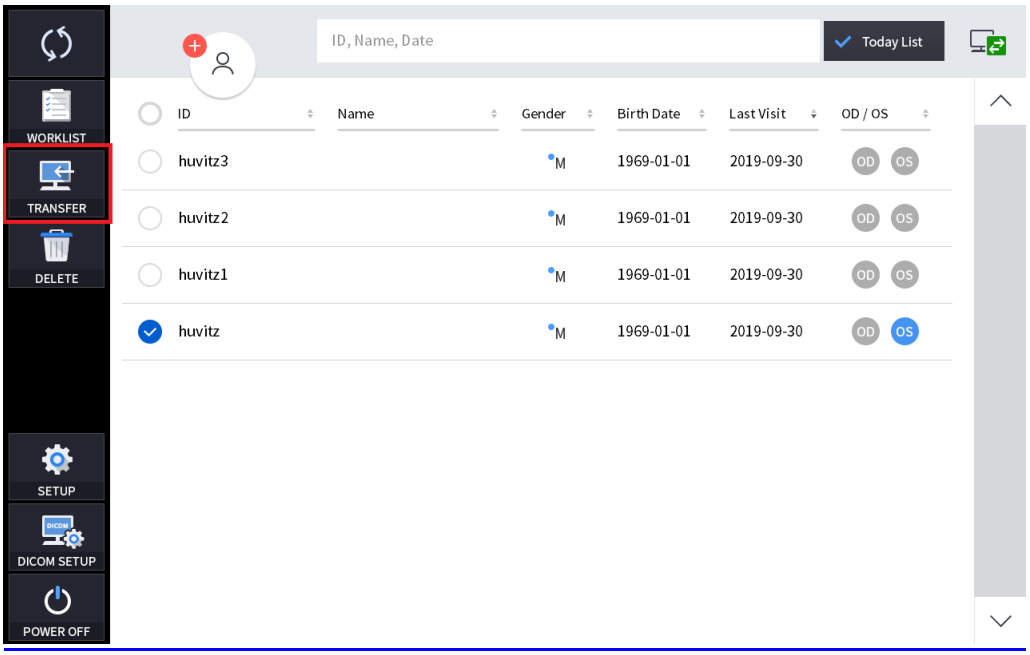
5. After rebooting the PC, connect to HIIS again.

■ HOCT-1/1F, HFC-1 (v1.3.3) Optical Coherence Tomography

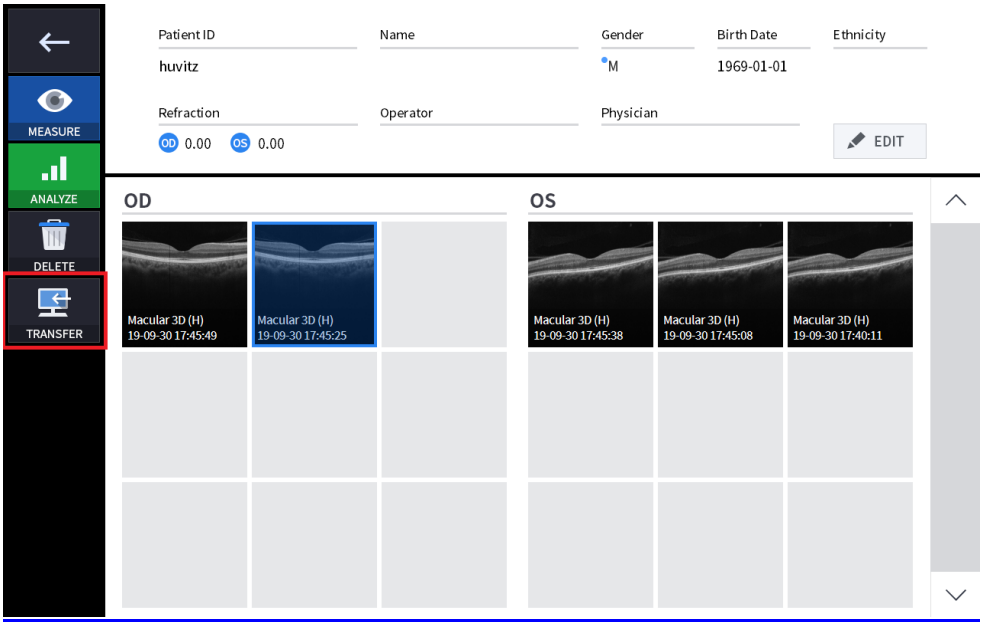
1. Fill in Server IP and Server Port information on [SETUP]-[System].
   (Server IP, it means local IP address, where Web-Viewer has installed.)



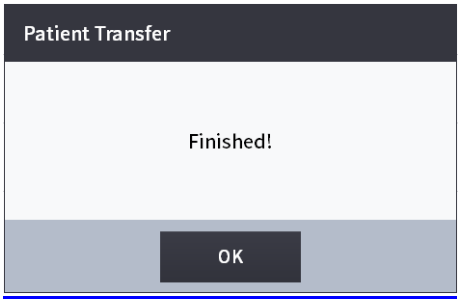
2. Select patients in the Patients List and clicking 'TRANSFER' button, send all of the patient data.



3. Select data in Data List. And Clicking 'TRANSFER' button, send the data.

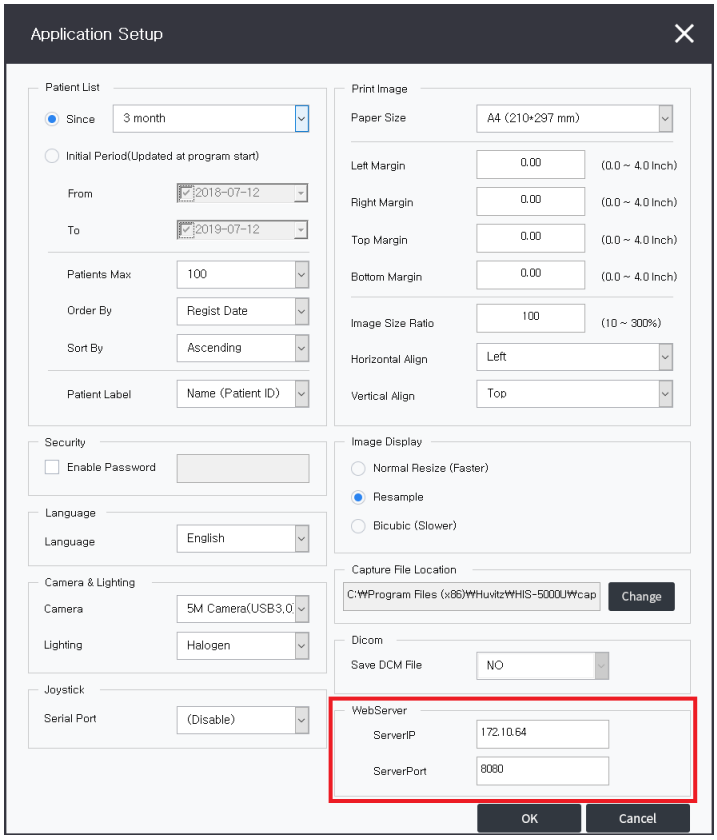


4. When it succeeded to send data, the following message box popped up on the window.

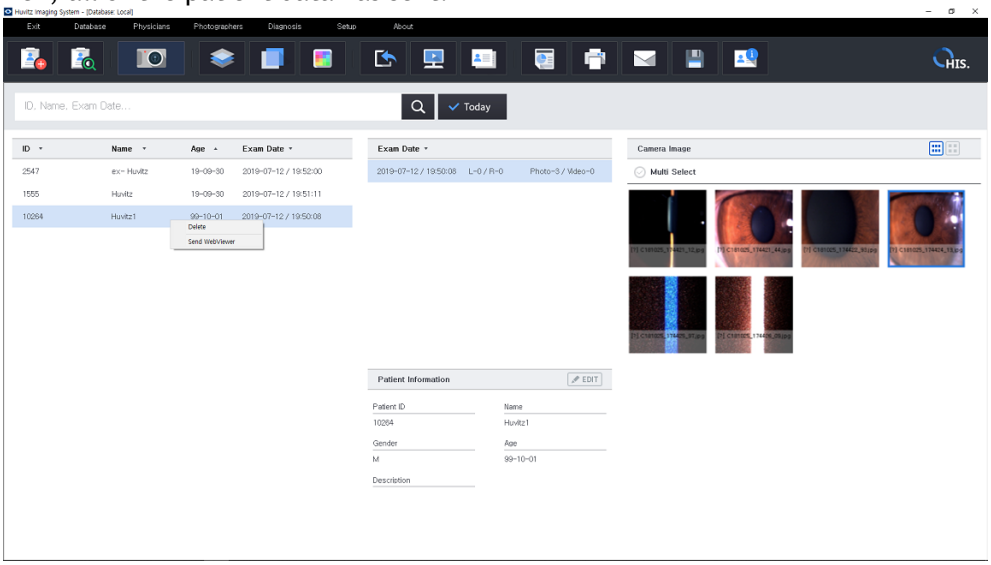


■ HIS-5000U (v4.04.20) Slitlamp & Imaging System

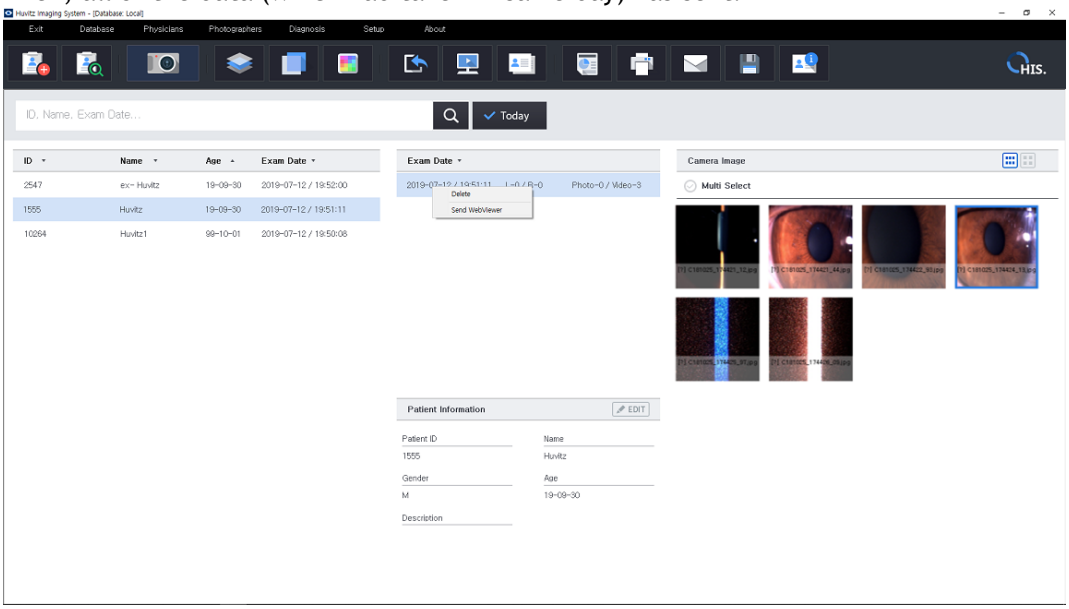
1. Open the Setup window. Fill in WebServer setting and save the setting.
   (Server IP, it means local IP address, where Web-Viewer has installed.)



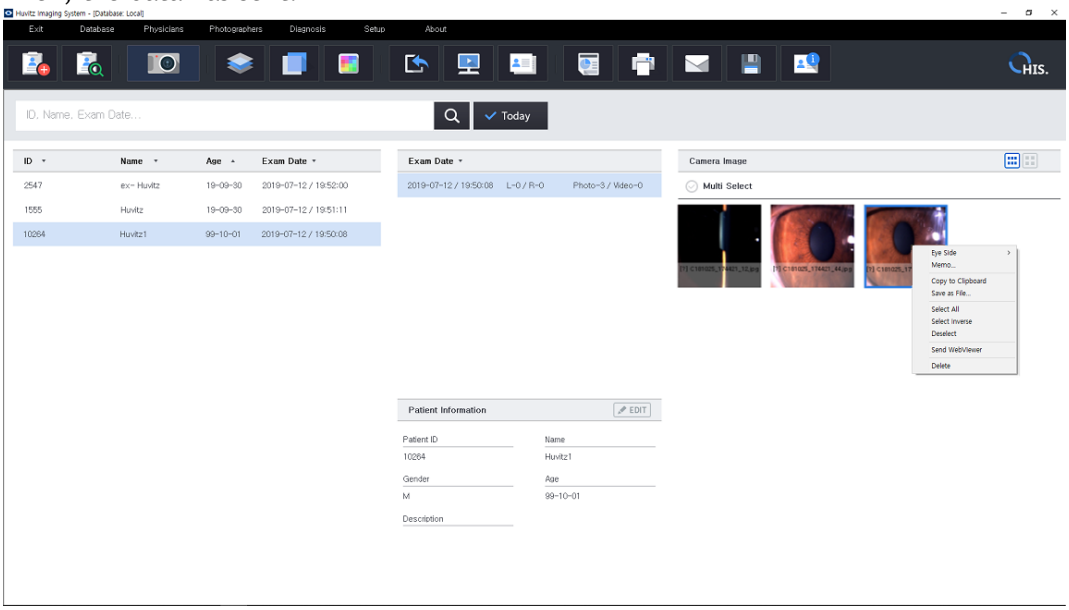
2. Select a patient in the Patients List. And using mouse right click, select ‘Send WebViewer’.
   Then, all of the patient data has sent.



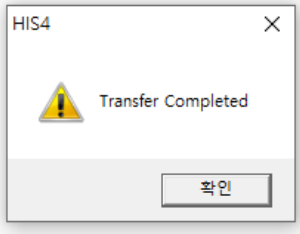
3. Select data in the Exam Date List. And using mouse right click, select ‘Send WebViewer’. Then, all of the data (which had taken in same day) has sent.



4. Select data in the Data List and Using mouse right click, select ‘Send WebViewer’. Then, the data has sent.

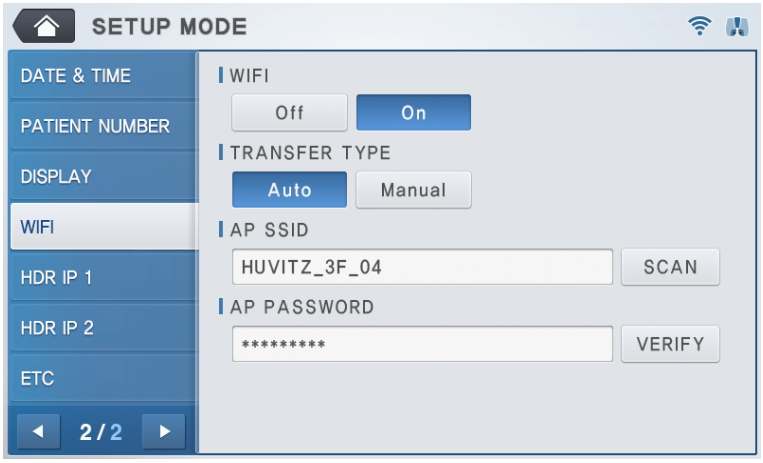


5. When it succeeded to send data, the following message box popped up on the window.

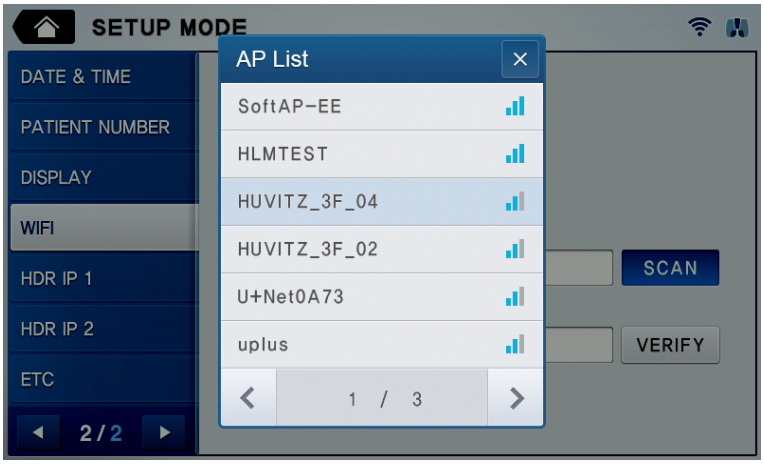


■ HRK-9000A Auto Ref / Keratometer

1. WiFi Network Setting for ref/keratometer.



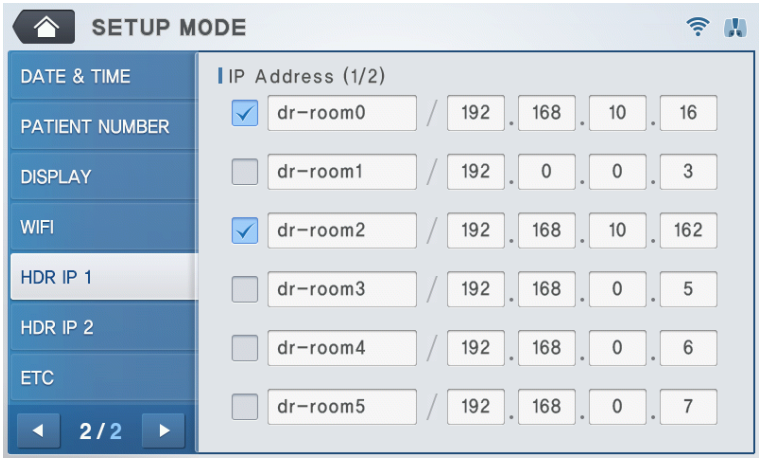
Select WIFI on SETUP MODE. And turn on WiFi to use transmission function, Set TRANSFER TYPE to set up data transmission method.



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

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

2. Web-Viewer Connection Setting for ref/keratometer



Select HDR IP 1 or HDR IP 2 on User SETUP Mode page 2. And Enter information for Server IP (where Web-Server is located).

-  : Select if transfer the data to Web-Viewer.

- 

: Enter a name for the Web-Viewer.

- 

: Enter the Web-Viewer Server IP address.

3. Check Network Status

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

(1)  : Connected to AP normally.

(2)  : Not connected to AP.

(3)  : AP connection process is in progress.

(4)  : Connected.

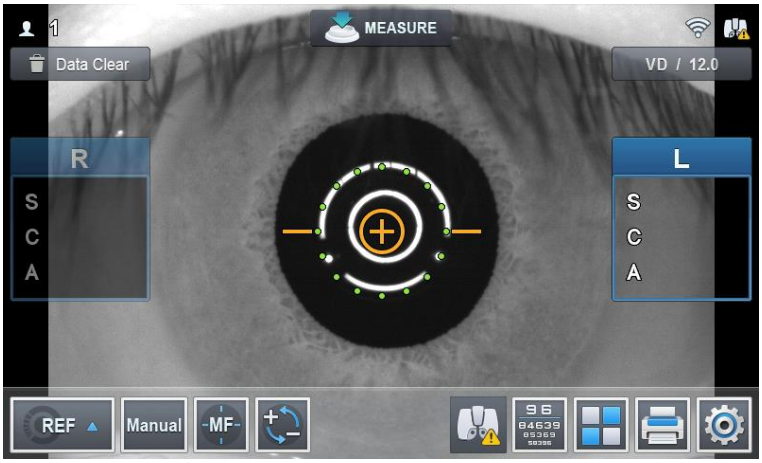
(5)  : Connection failure.

(6)  : Connection process is in progress.

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

Also, the machine is set to make attempts to connect automatically after connecting to AP.

If there is a connection failure after automated connection attempt or if there is a connection error during operation,  button will appear on the bottom of the main measurement mode screen.



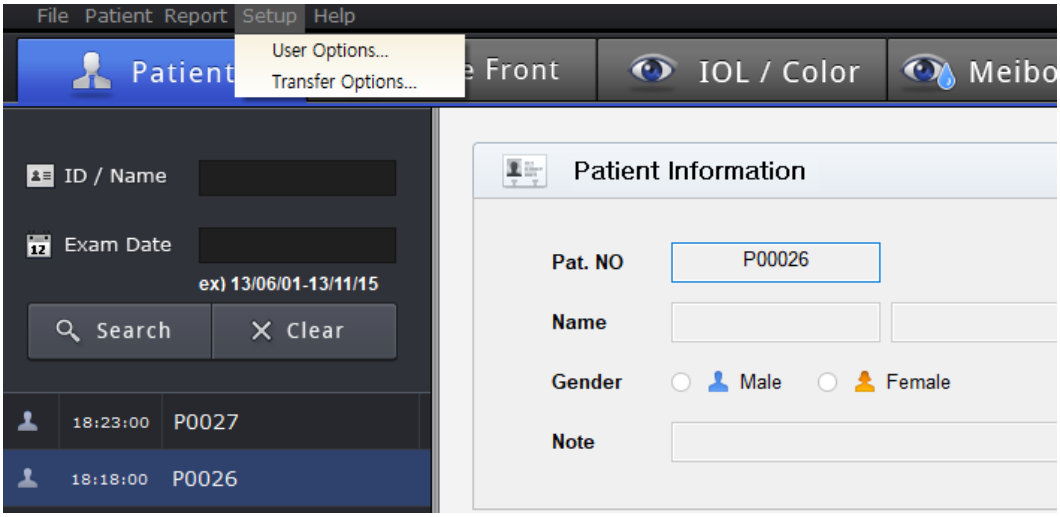
Pressing the button will bring up the connection status screen.

4. Transmit the data to Web-Viewer

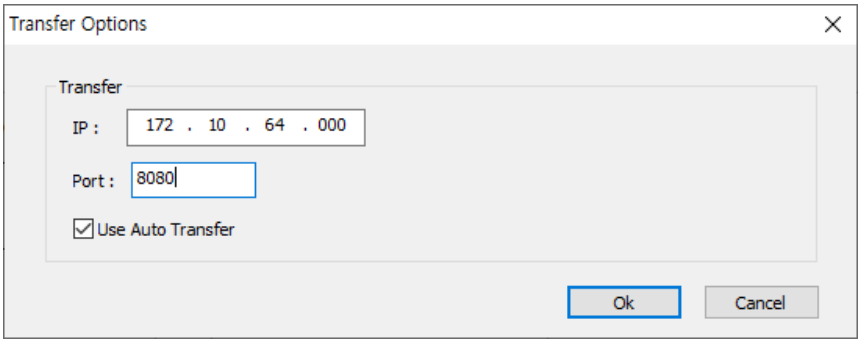
Click the ‘Print’ button (). Then, its data is immediately transmitted to Web-Viewer.

■ HRK-Mate (v1.0.12)

1. Open [Transfer Options..] in Setup



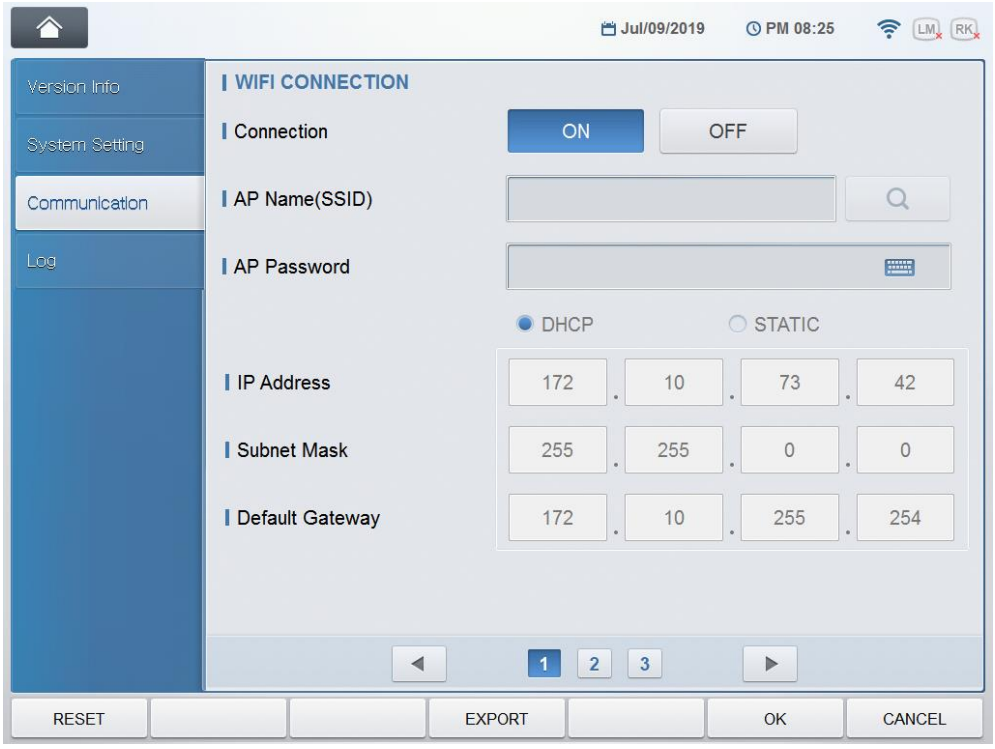
2. Fill in Transfer information (IP, Port), check 'Use Auto Transfer'. And save its setting. (Server IP, it means local IP address, where Web-Viewer has installed.)



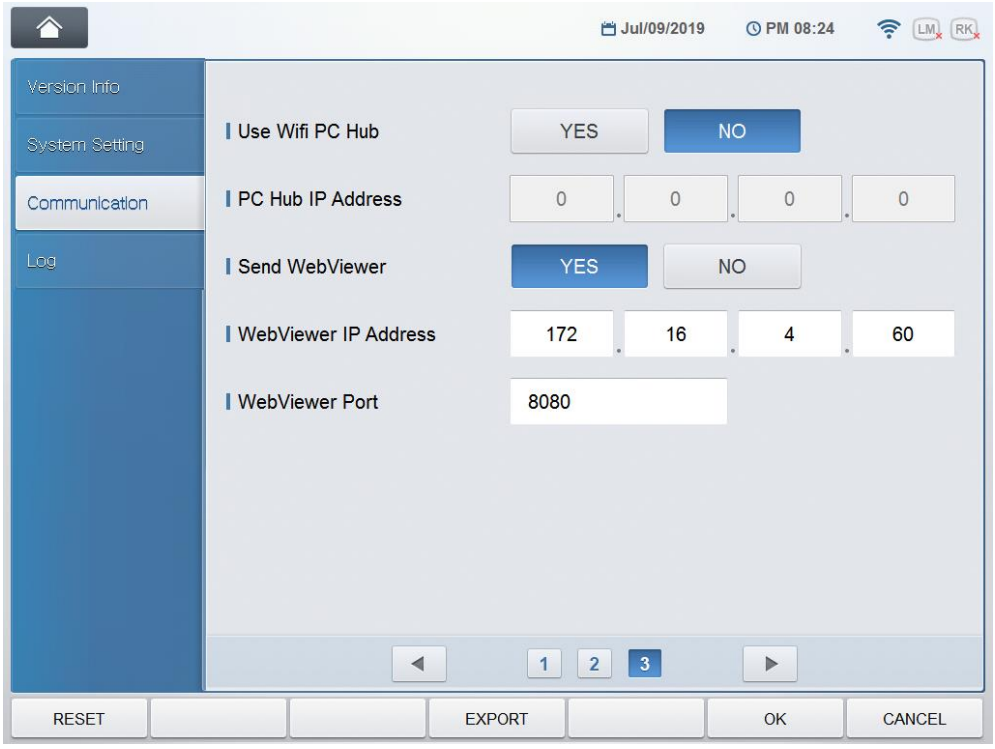
Then, it transfers the data to web-viewer, as HRK-Mate program receive the data from HRK device.

■ HDR-9000 (v1.1.2) Digital Refractor

1. Clicking Shift button, select Settings on Home Menu. And turn on Connection on Communication tab.

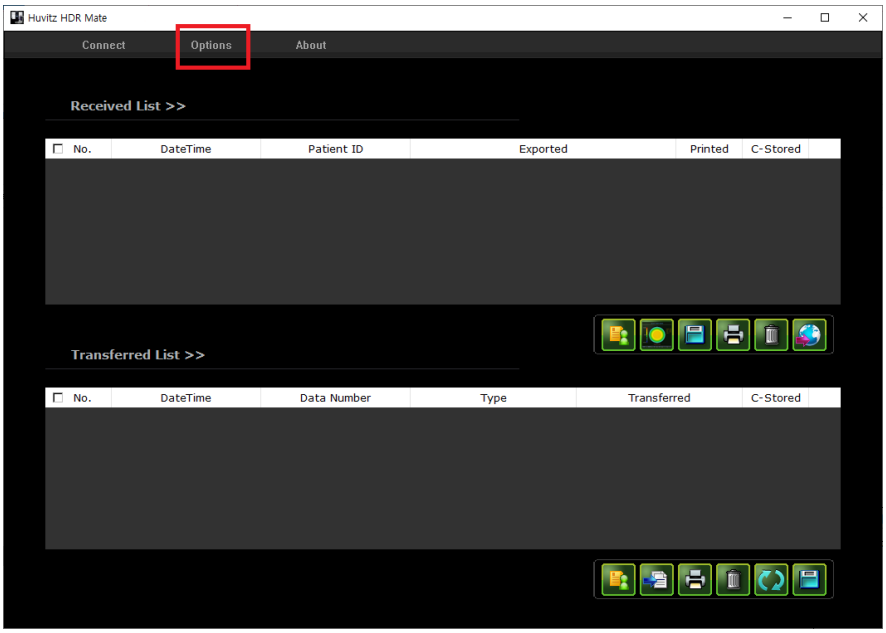


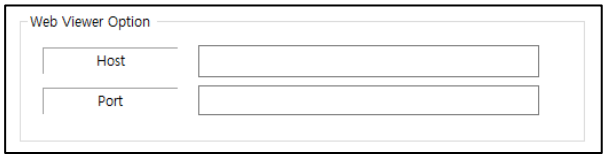
2. Set 'Send WebViewer' to 'YES'. And Fill in WebViewer IP Address and Port.



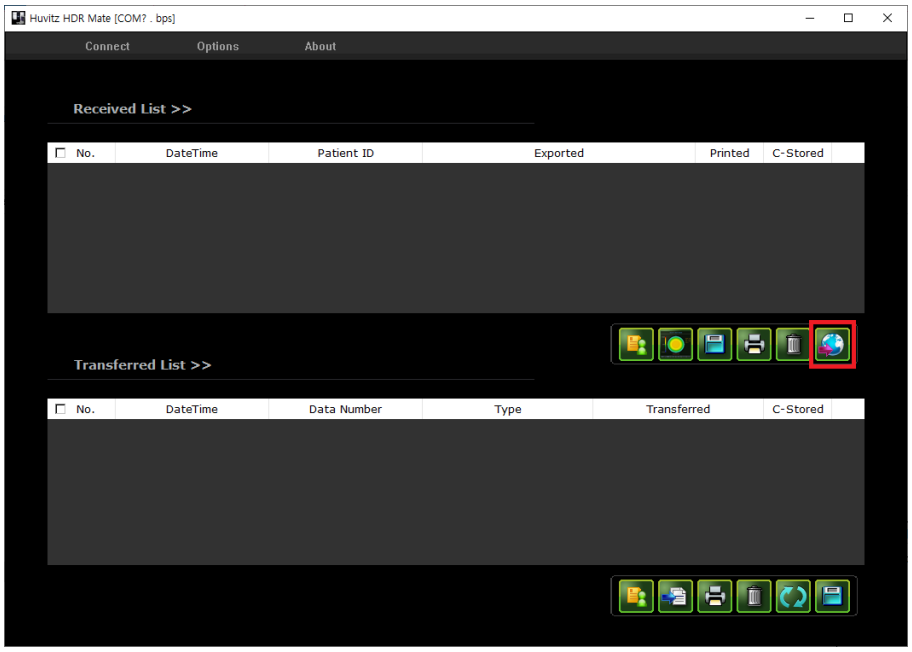
■ HDR-Mate

1. Fill in [Web Viewer Option] in [Options]-[Data Receiving & Transfer]





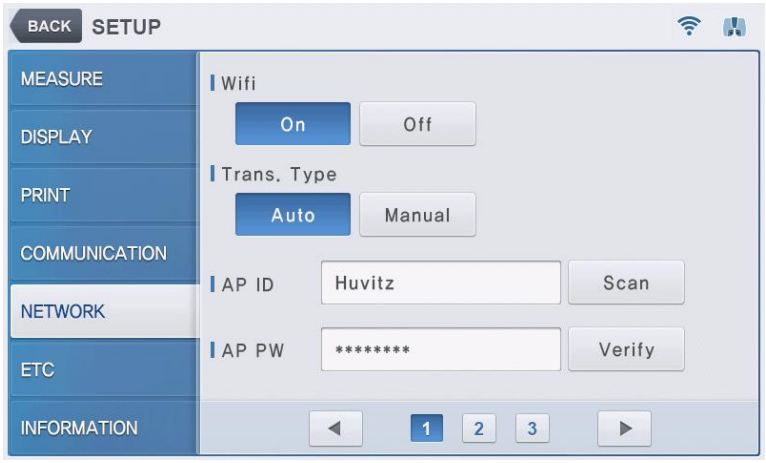
2. Select patient data in Received List.



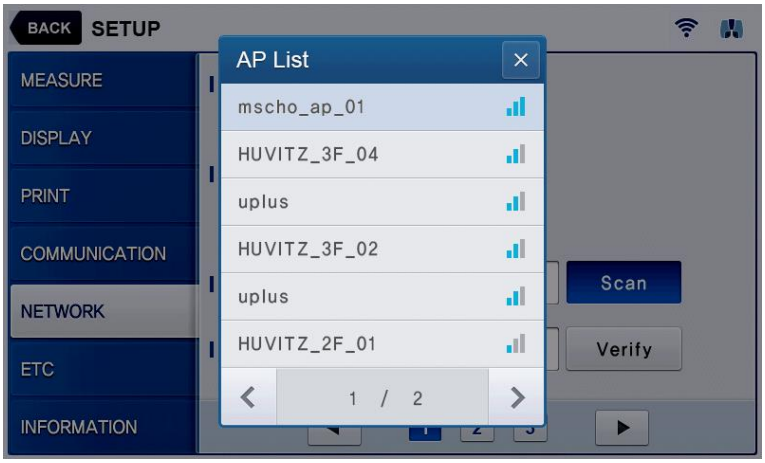
3. Click  button to send selected data.

■ HLM-9000 Auto Lensmeter

1. WiFi Network Setting.



Select NETWORK on SETUP MODE. And turn on WiFi to use transmission function, Set TRANSFER TYPE to set up data transmission method.

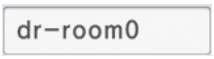


Press on the AP SSID entry window to enter SSID. When SSID is not known, press SCAN button on the right to select from available AP SSID.

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

2. Web-Viewer Connection Setting

Select NETWORK page 2 on User SETUP Mode. And enter information for Server IP (where Web-Server is located).

-  : Select if transfer the data to Web-Viewer.
- 

: Enter a name for the Web-Viewer.
- 

: Enter the Web-Viewer Server IP address.

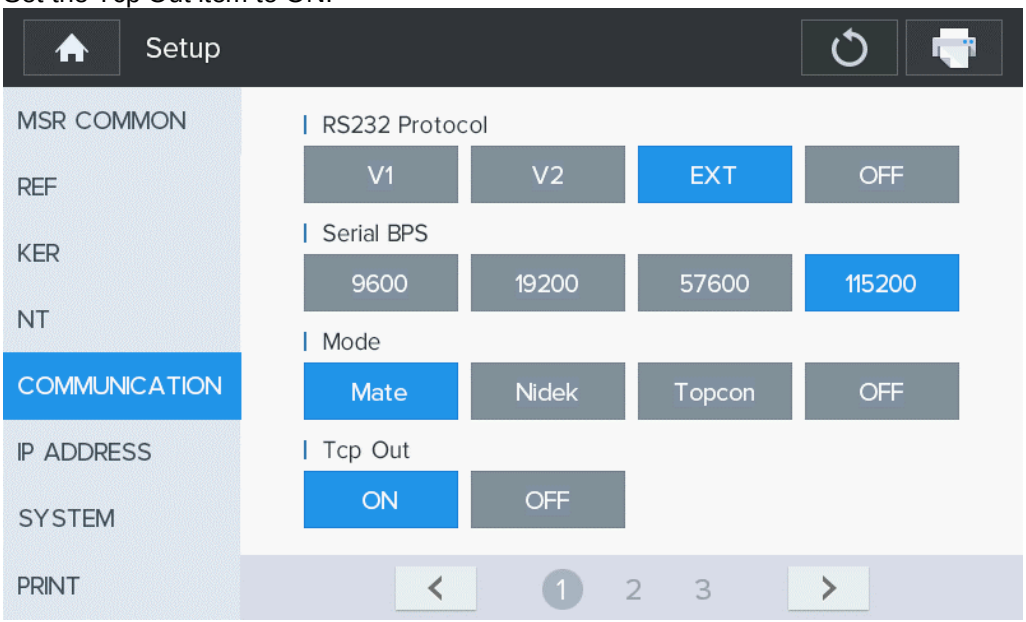
3. Transmit the data to Web-Viewer

Click the 'Print' button (). Then, its data has immediately transmitted to Web-Viewer.

■ HTR-1A Optometry & intraocular pressure

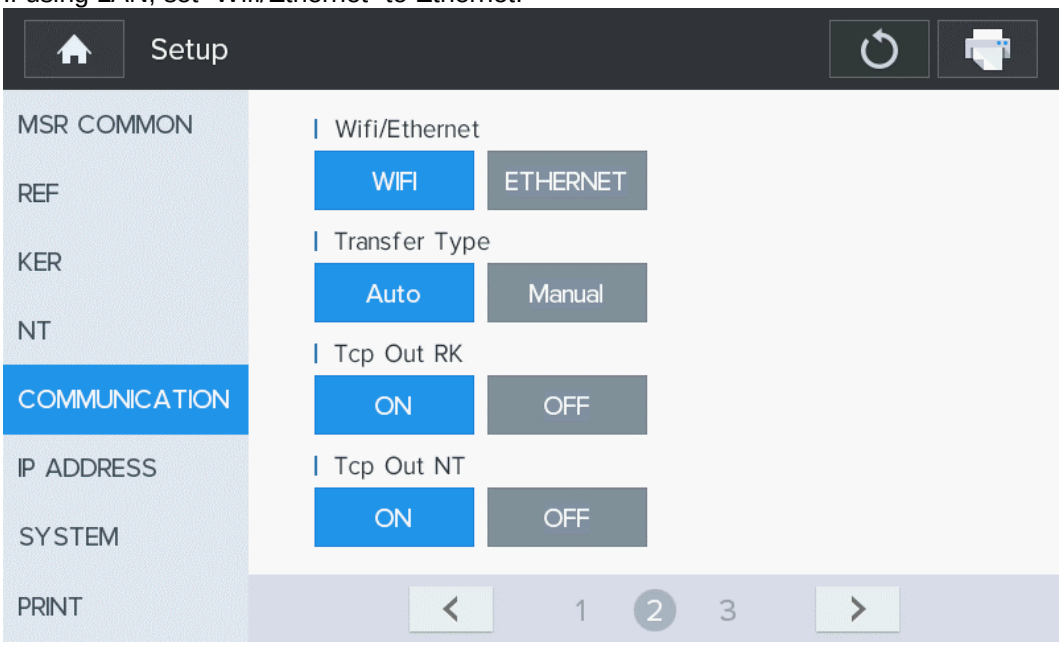
1. WiFi Network Setting

Select the [COMMUNICATION] tab in Setup mode.
Set the Tcp Out item to ON.

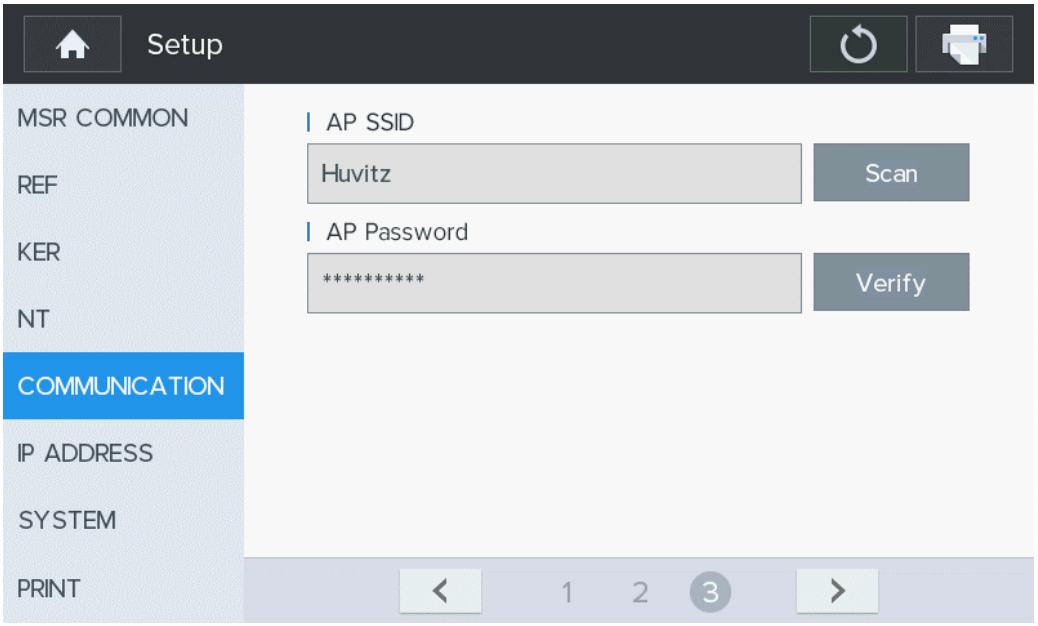


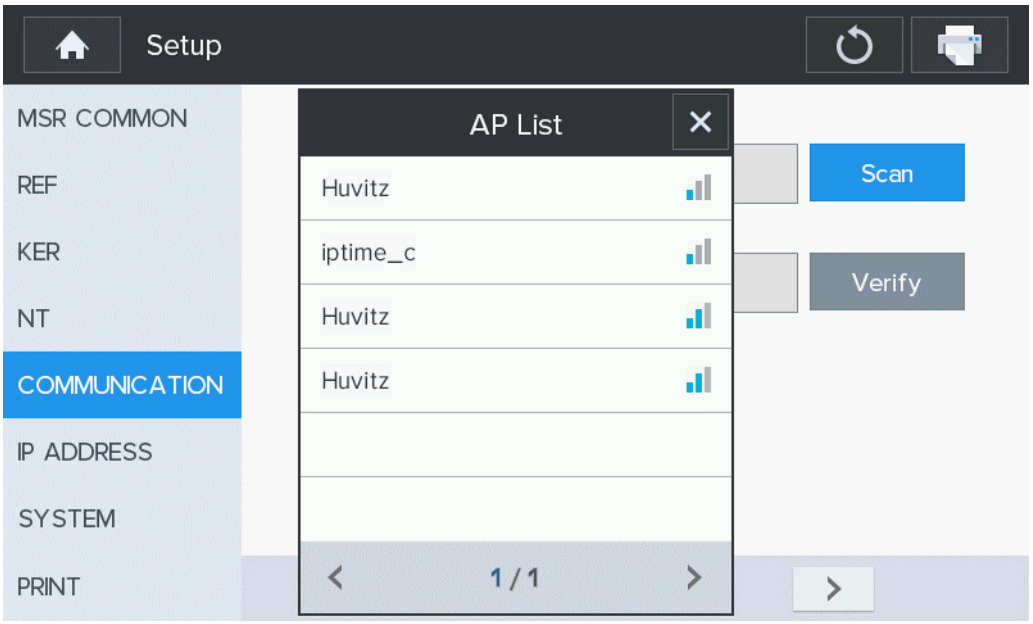
2. WiFi Network Setting

If using WiFi, set "Wifi/Ethernet" to WIFI.
If using LAN, set "Wifi/Ethernet" to Ethernet.

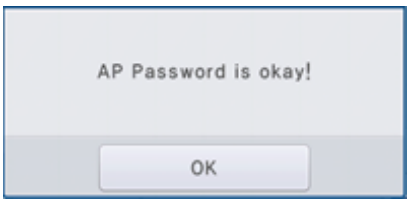


3. Go to the 3-tab page.
   Press on the AP SSID entry window to enter SSID. When SSID is not known, press SCAN button on the right to select from available AP SSID.

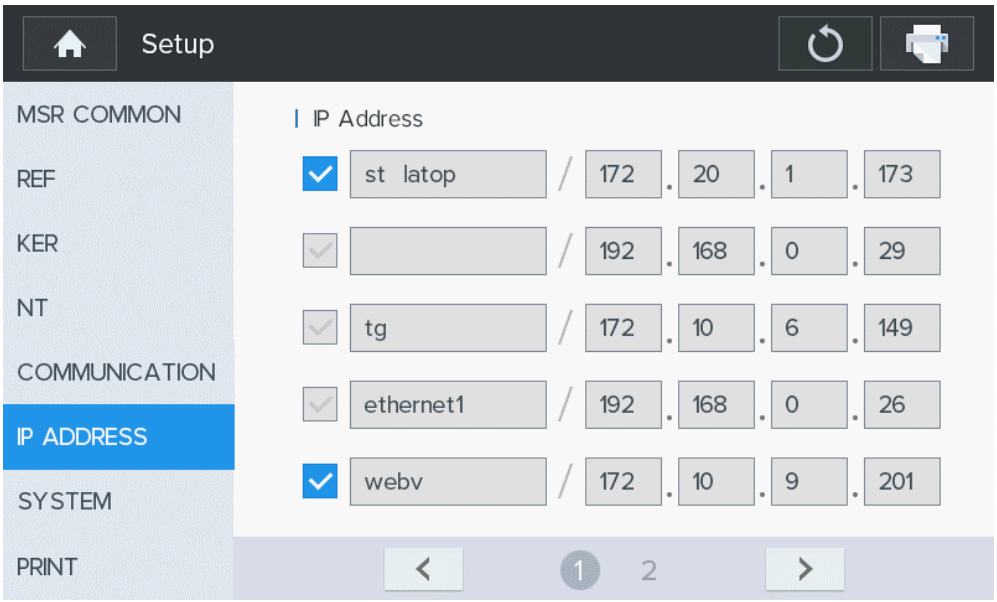




Press on the AP PASSWORD entry window to enter password. Press VERIFY button on the right to confirm the password. Password verification takes up less than 10 seconds, and the result will be shown on the screen.



4. Web-Viewer Connection Setting



Select NETWORK page 1 on User SETUP Mode. And enter information for Server IP (where Web-Server is located).

-  : Select if transfer the data to Web-Viewer.
-  : Enter a name for the Web-Viewer.
-  : Enter the Web-Viewer Server IP address.

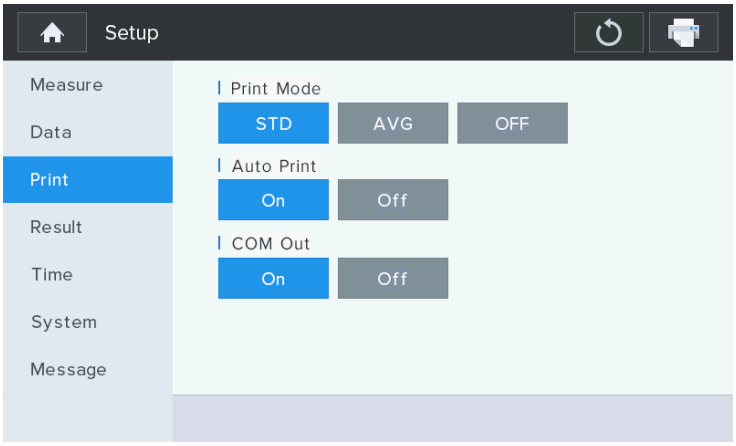
5. Transmit the data to Web-Viewer

Click the 'Print' button (). Then, its data has immediately transmitted to Web-Viewer.

■ HNT-1/1P Non-contact Tonometer

1. Serial COM Port Setting

Select the [Print] on the Setup page.



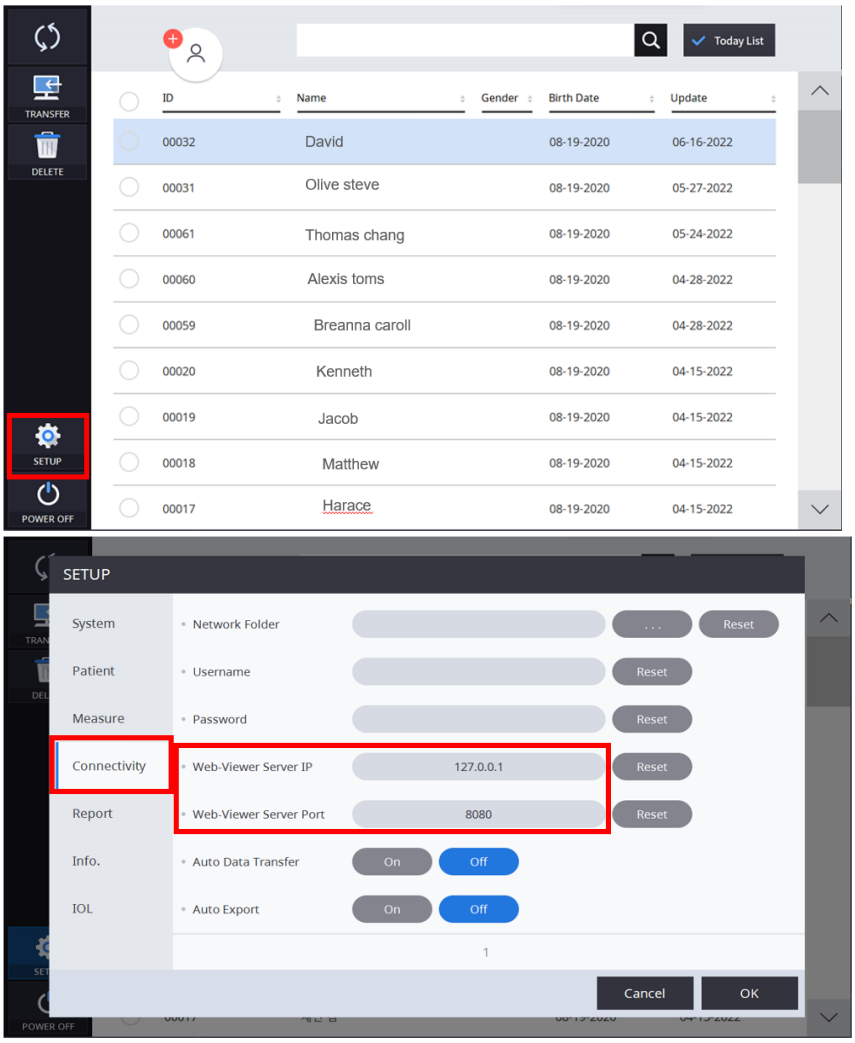
- **COM Out :** Setup of transmission on/off(Communication to other machines)

HNT equipment cannot be directly connected to HIIS.
However, data can be transmitted to HIIS with the following procedure.

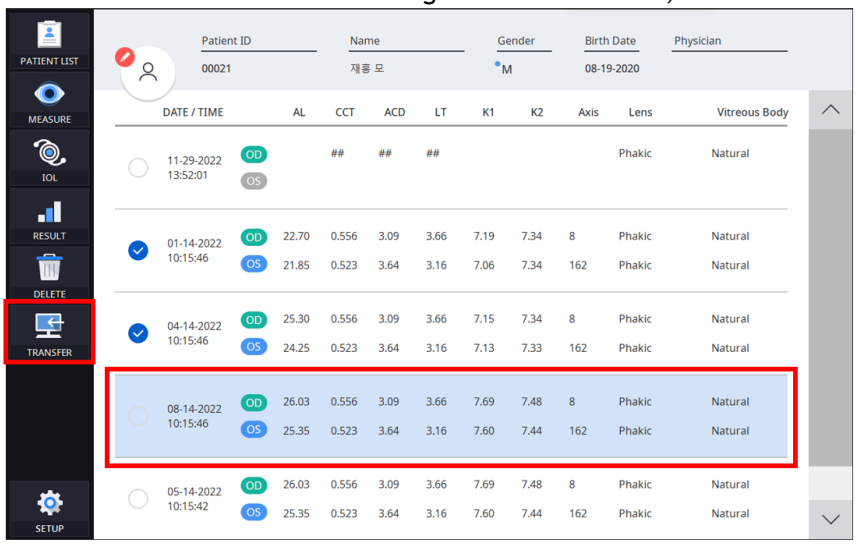
- Step-1) Connect with the PC where HRK-Mate is installed through the serial port.
- Step-2) Transmit data from HNT device to HRK-Mate SW.
- Step-3) Transmit data from HRK-Mate SW to HIIS.

■ HBM-1 & HTG-1 Standalone Biometry & Topography / Only Topography

1. Fill in Server IP and Server Port information on [SETUP]-[Connectivity].
   (Server IP, it means local IP address, where Web-Viewer has installed.)

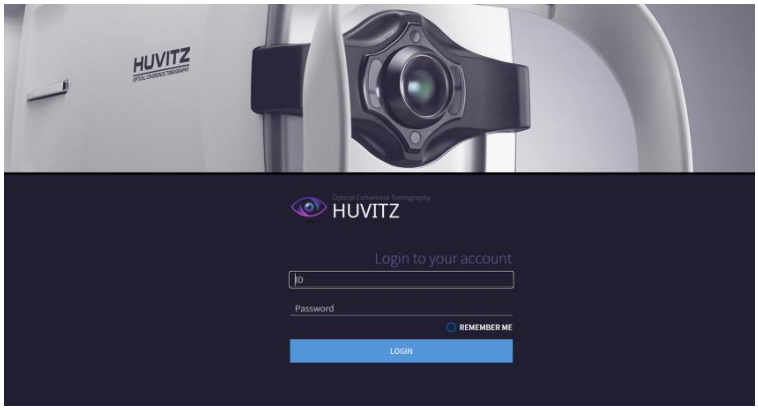


2. Select data in Data List. And clicking 'TRANSFER' button, send the data.

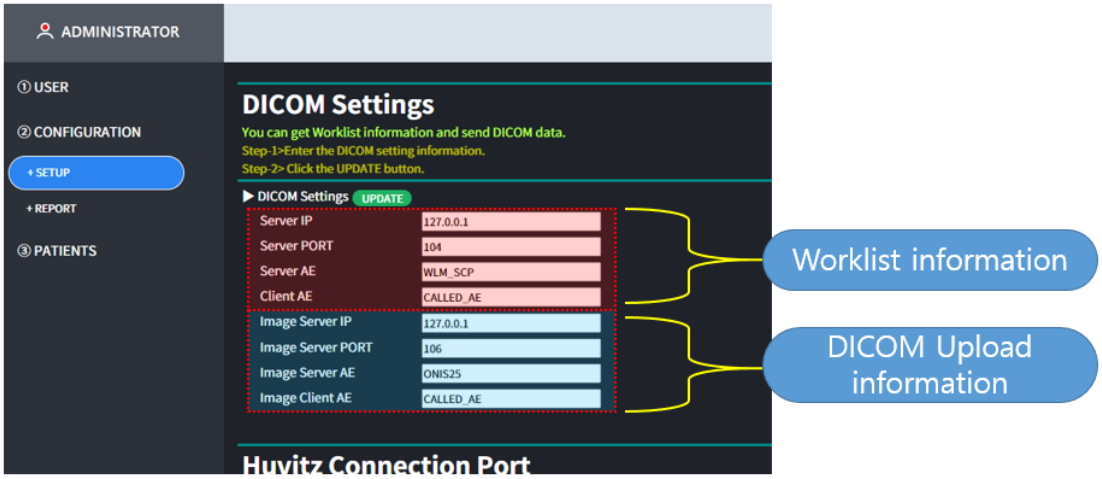


7 DICOM Setting

1. After running a browser (Chrome is recommended) on the PC, connect to HIIS.

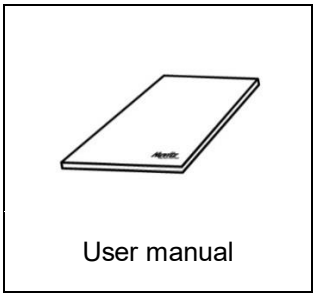


2. After entering your ID and password, click the LOGIN button to log in.
3. On the ADMINISTRATOR screen, click [CONFIGURATION] / [SETUP] to set the corresponding information.
4. Then enter the required information in the "DICOM Settings" field.
5. And then click the UPDATE button.



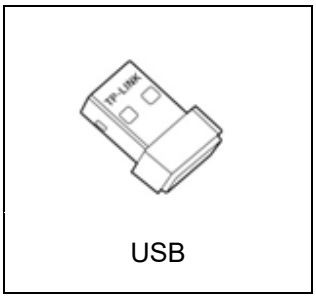
8 Specifications and Accessories

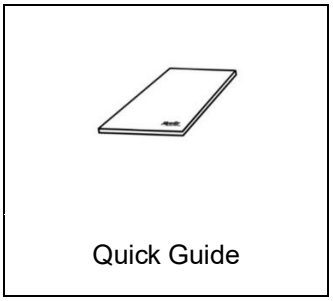
Standard Accessories



- User manual is provided as an electronic file (PDF) through manufacturer's web system.

Optional Accessories





- Key is provided as USB.
- Quick Guide is provided with USB.

Specifications.

Device specifications	
Type	Web-based software
List of supported devices	Ref/Keratometer, Refractor, Optical Coherence Tomography, Optical Biometer, Corneal Topographer, etc.,
Display	Fundus image, OCT image including Anterior, Angio, Biometry and Topograph), Slit lamp Image, Refraction, etc., One exam and 6 exams
Recommended platform	Server O/S: Windows 7 or greater (Windows 10 recommended) CPU: Intel i5 or greater Memory: 4GB or greater Ethernet: Fast Ethernet (Gigabit Ethernet recommended) Client O/S: Windows 7 or greater (Windows 10 recommended) CPU: Intel i5 or greater Memory: 4GB or greater Ethernet: Fast Ethernet (Gigabit Ethernet recommended) Browser: Chrome (recommended), IE 11 or greater
Feature	Web-Based, Multi users can be accessible.

9 Information Needed for Service

If the problem is not solved in spite of the settlement according to the contents of chapter 1.6, please contact to Huvitz's agent with the information on the following items.

Year/month/day purchased: _____

Client name: _____

Client address: _____

Client contact number: _____

Model number: _____

Serial number: _____

HIls-1 version: _____

Contact the Huvitz's service department directly by referring to the address and telephone numbers below if you cannot contact the distributor where you purchased the product.

■ **How to Contact Huvitz Co., Ltd.**

Huvitz Co., Ltd.
38, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14055, Republic of Korea
Tel: +82-31-428-9100 Fax: +82-31-477-9022(F/A)

E-mail : svc@huvitz.com website : www.huvitz.com

■ **EU Representative**

Medical Device Safety Service GmbH (MDSS)
Schiffgraben 41, 30175 Hannover, Germany

■ **Canada Representative**

AXIS Medical Canada Inc.,
9820 Boulevard Du Golf Anjou, QC
H1J 2Y7

■ **U.S.A Representative**

COBURN TECHNOLOGIES
55 Gerber road, South Windsor, Connecticut, 06074, United states

■ **Brazil Representative**

VR Medical
R. BATATAES 391, CEP 01423, SÃO PAULO

■ **Australia Representative**

OPTICARE

118 Adderley St, Auburn NSW 2144

■ **UK Representative**

Mainline Instruments
Unit 2, The Cyclo Works, Lifford Lane, Kings Norton
Birmingham, UK, B30 3DY

■ **Authorized Representative for Switzerland**

Laurenzenvorstadt 61
5000 Aarau
Switzerland