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1 OUTLINE OF THIS MANUAL

This manual describes the connection method to the PC via LAN connection for the TONOREF II. In this manual, the procedures to replace the circuit board of devices that do not support LAN connection, to upgrade programs (V1.06 or earlier to V1.07 or later), and to perform LAN connection settings are also described.

Perform the following work only for devices that do not support LAN connection.

- Replacing 15601-EA01 (primary power supply)
  See “3 REPLACEMENT OF EA01” (page 3).
- Program upgrade
  See “4 SOFTWARE UPGRADE” (page 5).

Serial numbers for models requiring EA01 replacement and program upgrade

<table>
<thead>
<tr>
<th>N. Inc.</th>
<th>Outside Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 720430</td>
<td>to 731586 (except for 731517)</td>
</tr>
</tbody>
</table>

The following work must be performed to all devices.

- Connection of equipment and cables
  See “5 DEVICE CONNECTION” (page 7).
- Setting of the receiver PC
  See “6 CONFIRMATION AND SETTING OF RECEIVER PC” (page 9).
- Network setting of the TONOREF II
  See “7 CONFIRMATION AND SETTING OF DEVICE” (page 12).
2 LAN CONNECTION

It becomes possible to transfer TONOREF II measured data to the PC via network. By transferring measured data to the PC, data management is possible utilizing various types of database software.

2.1 Basic Communication Specifications

<table>
<thead>
<tr>
<th>Basic specifications</th>
<th>CIFS (file sharing with PC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>RJ-45</td>
</tr>
<tr>
<td>Standard</td>
<td>10/100 Base-TX</td>
</tr>
<tr>
<td>Cable</td>
<td>Straight</td>
</tr>
<tr>
<td>Operating systems</td>
<td>Windows2000, XP, Vista</td>
</tr>
</tbody>
</table>

Network settings such as IP address and file sharing for any connected PC are required. Under approval of the network administrator of the facility, set parameters of the device and PC.

⚠️ CAUTION* Since parameters will be changed, print out the parameters to keep until the work is complete so that they can be restored manually should problems occur.
3 REPLACEMENT OF EA01

Replace 15601-EA01 (primary power supply) with the LAN support board.

1 Put the device on a stable table.

2 Push the main body to the side on which it will be laid and secure it using the locking lever, then gently lay the device on its side.

3 Unscrew BS3×6 (n = 4) to remove the base plate (30601-M002).

4 Unscrew BS3×8 (n = 3) to remove the inlet ASSY (15601-1100).

5 Unscrew BS3×8 (n = 1) to disconnect the EA01 ground wire.
6 Unscrew BS3×8 (n = 4), remove the switching power supply (80602-00102), then disconnect the P001 connector.

7 Unscrew FC3×6 (n = 4), then remove the BA05 board (15601-BA05) to replace 15601-EA01 with the LAN support board.

8 Reassemble the parts in the reverse order.

9 Peel off the masking sticker (LAN connector side) attached on the underside.
4 SOFTWARE UPGRADE

Note: When parameters have been set by customers, print the parameter settings in advance so that they can be restored.

1 Save the upgrade program to a USB flash drive.
   Upgrade software
   RKT2_softwrite_V***.mot (V 1.07 or later)
   The latest program is written in the CD-R of the RKT-2 upgrade kit (32106-0600).
   If more than three upgrade files are attempted to be saved, the fourth and other later files are not recognized. Only save up to three files.
   When saving upgrade files to the USB memory, save in the root directory, not in a created folder.

2 Turn off the device.

3 Connect the USB flash drive (32166-E340) to the USB A connector of the main body.

4 Turn on the device.

5 When two or more upgrade files are saved in the USB flash drive (32166-E340), the file select screen appears.
   Only when two or more upgrade files are saved, the file select screen appears.

6 Press the file to be upgraded.
7 The upgrade confirmation screen appears.

8 Press OK.

9 The screen shown to the right appears and upgrade starts.

10 When upgrade is complete, the screen shown to the right appears. Turn off the power.

11 Remove the USB flash drive from the device.

12 Turn on the power and confirm that the device starts properly.
   If the upgrade was failed, start from step 1 again.

13 Set the NETWORK parameters.
5  DEVICE CONNECTION

5.1  Connecting LAN Cables

Connect the LAN cable to the LAN connector on the underside of the device.
Connect the other end of the LAN cable to the HUB connected to the receiver PC.

⚠️ **CAUTION**  Be sure to connect to the PC via a network hub (HUB).
Do not connect to the PC directly. A connection failure may occur.

![Diagram of connecting LAN cables](image)

5.2  Connecting the Barcode Scanner/ Magnetic Card Reader

Turn off the main body and then connect the barcode scanner or magnetic card reader to the USB-A connector on the underside of the device.

⚠️ **CAUTION**  Do not connect or disconnect cables while the main body power is on.
An error may result.

Available barcode scanner/ magnetic card reader
Barcode scanner

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>19701-E006</td>
<td>USB barcode scanner (OPL-5850-USB, ROLAN)</td>
</tr>
<tr>
<td>36120-E122</td>
<td>USB barcode scanner (USBee-1000, WELCOM DESIGN)</td>
</tr>
</tbody>
</table>

Magnetic card reader

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14631-E001</td>
<td>Magnetic stripe card reader (MS240-2U MSR track I, II, UNITEK JAPAN)</td>
</tr>
</tbody>
</table>
5.3 System Diagram Example

The diagram shown below illustrates the connection of an actual system.

The system diagram below is only an example. It may be changed significantly depending on the connection network scale. To confirm the system diagram, contact the network administrator of the facility.

Server
IP ADDRESS: 10.50.XXX.YYY
SUBNET MASK: 255.255.255.0

Hub

Hub

Clinic
IP ADDRESS: 10.50.XXX.YYY
SUBNET MASK: 255.255.255.0

Slit lamp

Examination room
IP ADDRESS: 10.50.XXX.YYY
SUBNET MASK: 255.255.255.0

Receiver terminal PC
ARK-530A / NT-530 / TONOREFII
IP ADDRESS: 10.50.XXX.YYY
SUBNET MASK: 255.255.255.0

* XXX, YYY : 0 to 255
(Set by the facility administrator to avoid repeated IP address in the network.)
6 CONFIRMATION AND SETTING OF RECEIVER PC

6.1 Reception Structure of Measured Data

Measured data transmitted from the TONOREF II is captured by the receiver PC as shown in the illustration below.

Measured data transmitted via LAN are written in the shared folder set in the receiver PC. For measured data, XML format and JPEG format files from image data are written in the shared folder. Then, measured data is extracted by filing software and saved in the database.

6.2 Setting the Shared Folder

Set up a shared folder to save measured data transmitted from the TONOREF II.

- Do not set measured data to be saved in an external storage such as an external hard disk.
- Be sure no shared folders have the same name.

The device cannot discern the folder and measured data cannot be transmitted properly.

ex.) “C:\TEMP\DATA” and “C:\ProgramFiles\DATA” : Folder name “DATA” is common.

Change the name of either folder to “C:\TEMP\RKT” to avoid repeated file names.

* This is only when set as a shared folder.

The shared folder (folder path) specified here is set in the parameter of the device and software of the receiver PC.
ex.) Setting a shared folder (folder name: RKT) to the desktop of the receiver PC

1) Newly create a folder on desktop and name the folder with “RKT”.

2) Open the “RKT Properties” dialog box of the RKT folder and select “Share this folder” in the Sharing tab.
   * The illustration to the right is an example from Windows XP.

3) Click the Permissions button to display the “Permission for RKT” dialog box and then check the Allow box for Full Control in “Permissions for Everyone”.

4) Click the OK button to return to the “RKT Properties” dialog box.

5) In the Security tab, check the Allow box for Full Control in “Permissions for Administrators”.

6) Click the OK button to return to the desktop.
6.3 Confirming Items Necessary for Other Settings

Confirm the following settings necessary for device connection. (If necessary, confirm to the network administrator.)

- Login user name of the receiver PC
- Login password of the receiver PC
- Domain name of the receiver PC (domain name of the connected network)
  (If no domain exists, confirm the work group name.)
- Computer name of the receiver PC (or IP address of the receiver PC)
  (Confirm the computer name and domain using System Properties of the PC.)
- Shared folder name (see "6.2 Setting the Shared Folder" (page 9) for setting.)
- IP address of the device (issued by the network administrator)
- Subnet mask of the device (issued by the network administrator)

ex.) Confirmation of each setting

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login user name</td>
<td>NIDEK</td>
</tr>
<tr>
<td>Login password</td>
<td>NIDEK</td>
</tr>
<tr>
<td>Domain name</td>
<td>NIDEK</td>
</tr>
<tr>
<td>Computer name (IP address of the receiver PC)</td>
<td>10. 50. 1. 1 (IP address of the receiver PC)</td>
</tr>
<tr>
<td>Shared folder name</td>
<td>RKT</td>
</tr>
<tr>
<td>IP address of the device</td>
<td>10.50.1.10</td>
</tr>
<tr>
<td>Subnet mask of the device</td>
<td>255.255.255.0</td>
</tr>
</tbody>
</table>
7 CONFIRMATION AND SETTING OF DEVICE

7.1 Setting the MAC Address

No MAC address is set for products shipped before LAN support. This item is intended for products shipped before LAN support.

- A MAC address needs to be issued. Take a note of the serial number and then ask the service department to issue an address.
- A MAC address is a physical address of the network equipment, which is unique to the hardware, and every device needs to have a unique value. (To support every serial number, each address is assigned.)
- When connecting to a large-scale network, since the device MAC address is registered in the network, the network administrator may request notification of the device MAC address.

Follow the procedure below to set the MAC address.

1. Turn on the power switch while pressing and holding the L-3 and R-3 buttons on the panel to enter maintenance mode.
   Continue to press the panel button until a beep sounds.

2. The button check screen appears.

3. Press the eight function buttons, chinrest up and-down buttons, and start button in order and then confirm that OK is displayed on the screen.
   When OK is displayed by pressing all buttons, the MENU screen appears.

4. Press up button or down button to select SET MAC ADDRESS.

5. Press the execute button to enter MAC address setting mode.

6. Press button or button to move between each item and then press the left button or right button to change the value.
   There are 256 values from 00 to FF available for each item.

7. Press the save button to store the setting.

8. Turn off the power, turn on the power in maintenance mode again, and then select SET MAC ADDRESS to enter MAC address setting mode.

9. Confirm that the set value is properly saved.
7.2 Setting the Device Transmission

Set the network parameters of the device based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11).

1. Turn on the device to enter the PARAMETER SETTING screen.
   Follow steps 6 to 7 of “7.1 Setting the MAC Address” (page 12) for details.

2. Select NETWORK from the parameter items.
   The NETWORK setting screen appears.

3. Set the NETWORK parameter to YES.

4. Set the DHCP parameter to NO.
   For cases where an IP address is automatically assigned, use the DHCP parameter (select YES). When an IP address is issued, select NO.

5. When the IP parameter is selected, the execute button is displayed.

6. Press the execute button to enter IP ADDRESS setting mode.
7 Input the IP address based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11) by the following button operation. (e.g.: 10. 50. 1. 10)

<table>
<thead>
<tr>
<th>Press</th>
<th>Moves the cursor.</th>
</tr>
</thead>
<tbody>
<tr>
<td>or rotate the joystick clockwise.</td>
<td>Decreases the input value.</td>
</tr>
<tr>
<td>or rotate the joystick counterclockwise.</td>
<td>Increases the input value.</td>
</tr>
</tbody>
</table>

8 Pressing the exit button displays a screen to confirm the input IP address.

9 Select YES and press the execute button. To select YES or NO, press , , or rotate the joystick. The screen returns to the NETWORK setting screen.

10 Select the MASK parameter and set the subnet mask in the same manner as steps 5 to 9. (e.g.: 255. 255. 255. 0)

11 Select the USER parameter.

12 When the USER parameter is selected, the execute button is displayed.
13 Press the execute button to enter USER NAME setting mode.

14 Input the login user name based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11) by the following button operation.

* Entry is case insensitive. Input all with uppercase letters.
  (e.g.: NIDEK)

<table>
<thead>
<tr>
<th>Action</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press or rotate</td>
<td>Moves the character to be input (cursor) in the character list field</td>
</tr>
<tr>
<td>joystick counterclockwise.</td>
<td>to the left.</td>
</tr>
<tr>
<td>Press or rotate</td>
<td>Moves the character to be input (cursor) in the character list field</td>
</tr>
<tr>
<td>joystick clockwise.</td>
<td>to the right.</td>
</tr>
<tr>
<td>Press</td>
<td>Moves the cursor in the input field to the left.</td>
</tr>
<tr>
<td>Press</td>
<td>Moves the cursor in the input field to the right.</td>
</tr>
<tr>
<td>Press or start button.</td>
<td>Determines the character to be input and moves the cursor to the next position.</td>
</tr>
<tr>
<td>Press</td>
<td>Erases the character at the cursor position and moves the cursor to the previous position.</td>
</tr>
</tbody>
</table>

15 Pressing the exit button displays a screen to confirm the input user name.

16 Select YES and press the set button.
   The screen returns to the NETWORK setting screen.

17 Select the PASSWORD parameter and set the login password in the same manner as steps 11 to 16 based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11).

* Entry is case sensitive. Input the password correctly for case sensitivity.
  (e.g.: NIDEK)

18 Select the DOMAIN parameter and set the domain name in the same manner as steps 11 to 16 based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11).

(e.g.: NIDEK)

* If it does not exist, set the work group name. (e.g.: “WORKGROUP”)
19 Select the PC NAME parameter and set the connected computer name in the same manner as steps 11 to 16 based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11).
   (e.g.: 10. 50. 1. 1)

20 Select the FOLDER parameter and set the shared folder of the PC to which measured data is transmitted in the same manner as steps 11 to 16 based on the information of “6.3 Confirming Items Necessary for Other Settings” (page 11).
   (e.g.: RKT)

21 Select the IMAGE SEND parameter and set YES when transferring image data.

22 After all NETWORK parameters are set, press the exit button twice to exit from the PARAMETER SETTING screen.
   * Confirm that the PARAMETER SETTING screen is completely exited and the normal measurement screen is displayed.
   * Unless the PARAMETER SETTING screen is exited, network settings are not saved.

23 After turning off the device, turn it on again to reboot.
7.3 Testing the Device Network Setting

After completing up to step 23 of “7.2 Setting the Device Transmission” (page 13) in the previous section and rebooting, enter the PARAMETER SETTING screen. Select NETWORK as in the previous section to enter the NETWORK setting screen.

Press the TEST button shown to the right to perform LAN connection test. The test result is displayed on the screen for about 2 seconds accompanied by a beep.

When LAN connection test was successful

The following message appears indicating on the screen that the test was normally complete.

![Connection OK]

(To be continued...)

When LAN connection test was failed

The following message appears on the screen indicating the test result was abnormal.

- Including the shared folder setting of the receiver PC, the above setting may not be correct. Confirm the parameter settings again and set them correctly.
- For details of error code, see “9 LAN CONNECTION ERROR CODES” (page 20).

![Error 771]

(To be continued...)

When LAN connection test is complete successfully, the device network setting is finished.
### 7.4 Setting the Barcode Reader/ Magnetic Card Reader

Pressing the execute button after selecting the READER parameter on the PARAMETER SETTING screen displays the read screen (READER screen) of the barcode scanner/ magnetic card reader.

When the patient ID is read by the barcode scanner or magnetic card reader at the point, data read in the ID field of the READER screen is displayed.

#### Changing the read position using the barcode scanner/ magnetic card reader

ID used for display or data transmission on the device consists of up to 14-digit characters displayed on the READER screen (set by the READER LENGTH parameter). For magnetic card readers that have more data capacity, change the ID read start position with the READER START parameter.

Pressing the change button enters the screen where all read data can be displayed. Use this to determine the position in which reading starts.

Pressing the change button again returns to its original screen.

#### Changing the read length using the barcode scanner/magnetic card reader

The read length can be changed by the READER LENGTH parameter. When also reading characters other than ID, change this parameter together with the change of the read position above.
8 CONFIRMATION OF TRANSMITTED MEASURED DATA

8.1 Data Structure in the Shared Holder

Transmitted data is saved in the shared folder and lower levels in the folder structure shown below. If data has not been captured in the receiver software, check whether data is written in any folder below including device error code.

When captured properly, transmitted measured data is erased by the receiver software. Therefore, it cannot be checked.

8.2 File Name of Measured Data (Image Data)

File names of measured data (image data) transmitted from the device to the receiver PC are as follows: ID characters that cannot be used for file names are all converted to tilde (\`).

Measured data

Image data
# 9 LAN CONNECTION ERROR CODES

The following table indicates error codes on LAN setting. When the device displays an error code, refer to the table.

<table>
<thead>
<tr>
<th>Error code Message No.</th>
<th>Details</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| 700 ERR700            | File sharing error  
Windows file sharing error | • Check the LAN cable connection.  
• Check that the IP address or subnet mask is correct on the NETWORK setting screen. |
| 703 ERR703            | Hardware error  
IC error | • Replace BA01. |
| 704 ERR704            | DHCP error  
The IP address cannot be obtained. | • Replace BA01. |
| 750 ERR750            | Network access error  
Access to the network is not allowed. | • Check the LAN cable connection.  
Check that the IP address or subnet mask is correct on the NETWORK setting screen. |
| 751 ERR751            | Network writing error  
Writing to the PC is not allowed. | • Check that the PC folder specified as the place in which data is saved is a shared folder or that free space is left. |
| 754 ERR754            | PC name error  
The specified PC name does not exist. | • Check that the computer name specified by the PC NAME parameter on the NETWORK setting screen is correct or that LAN is properly connected. |
| 755 ERR755            | Read-only folder error  
The folder in which data is saved is read-only attribute. | • The folder of the connected PC is write-protected. Disable the write-protect. |
| 756 ERR756            | Log-on error  
Logging on the PC is not possible  
(The user name or password is incorrect.) | • Entry in the user name or password field on the NETWORK setting screen is incorrect. |
| 757 ERR757            | Shared holder error  
The shared folder does not exist.  
(The shared folder name is incorrect.) | • Check the folder name or whether the folder is set to share. |
| 758 ERR758            | Time-out error  
Timeout (The PC did not finish the process in a specified time.) | • Reduce the PC processing load. (Reduce the resident software). |
| 759 ERR759            | Delete error  
PC data cannot be deleted. | • The folder of the connected PC is write-protected. Disable the write-protect. |
| 760 ERR760            | Error during initialization  
The network is undergoing initialization (requires a certain amount of time). | • Wait and try again. |
| 761 ERR761            | Access authority error  
File sharing setting is improper. | • Check the file sharing setting of the shared folder of the connected PC. |
| 762 ERR762            | Account error  
The account is disabled. (The user setting is improper.) | • Enable the account of the connected PC. |
<table>
<thead>
<tr>
<th>Error code Message No.</th>
<th>Details</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| 771 ERR771            | • Cable connection error  
                         • The LAN cable is not connected. | • Check the LAN cable connection. |
| 772 ERR772            | • ACK error  
                         • There is no response from the PC. | • The deleting process of measured data files by the receiver software did not finish within the specified time. Check that the software operates properly. If it occurs frequently, retry connection after setting the NETWORK parameter from ACK to YES. |