

**USER MANUAL
COMPUTERIZED TONOMETER**

**CT-1P
CT-1**

INTRODUCTION

Thank you for purchasing the TOPCON COMPUTERIZED TONOMETER CT-1P/CT-1.

INTENDED USE / INDICATIONS FOR USE

Measuring intraocular pressure through the cornea based on the tension of the eye ball, to provide information for diagnosis.

Measuring the corneal thickness to adjust intraocular pressure (only in CT-1P).

FEATURES

This instrument features the following:

- The position of the touch panel can be adjusted to accommodate the user's preferred position.
 - Auto alignment function enables measurement under optimal conditions.
-

PURPOSE OF THIS MANUAL

To get the best use of the instrument, read GENERAL SAFETY INFORMATION and DISPLAYS AND SYMBOLS FOR SAFE USE.

Keep this manual at hand for future reference.

[CAUTION] Federal law restricts this device to sale by or on the order of a physician.
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 2. The contents of this manual are correct to the best of our knowledge. Please inform us of any ambiguous or erroneous descriptions, missing information, etc.
 3. This manual is original instructions.
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






DISPLAYS AND SYMBOLS FOR SAFE USE


















To encourage safe and proper use and to prevent injury to the operator and others or potential damage to property, important messages are put on the instrument body and inserted in the manual. We suggest that everyone understand the meaning of the following displays, icons and text before reading the "GENERAL SAFETY INFORMATION" and observe all listed instructions.

DISPLAY

Display	Meaning
 CONTRAINDICTION	Situations in which the device should not be used because the risk of use clearly outweighs any possible benefit.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTE	Useful functions to know. Paying attention to these will prevent the noted problems.

SYMBOL

Symbol	Description	Description (French)
	Alternating Current	Courant alternatif
	Off (power: disconnection from the main power supply)	Éteint (courant: coupure avec le secteur)
	On (power: connection to the main power supply)	Allumé (courant: raccordement sur le secteur)
	Type B applied part	Partie appliquée du Type B
	General warning sign	Symbole d'avertissement général
	Refer to instruction manual/booklet	Voir le manuel/la brochure
	Date of manufacture	Date de fabrication
	Serial number	Numéro de série

	Manufacturer	Fabricant
	Authorised Representative in the European Community	Représentant autorisé pour l'Union européenne
	Unique Device Identification (UDI)	Identification unique des dispositifs (IUD)
	Humidity limitation	Limite d'humidité
	Atmospheric pressure limitation	Limite de pression atmosphérique
	Temperature limit	Limite de température
	Fragile, handle with care	Fragile manipuler avec soin
	Keep dry	Garder au sec
	This way up	Vers le haut
	Maximum number of identical packages which may be stacked on one another.	Nombre maximum d'emballages identiques pouvant être empilés les uns sur les autres.
	General symbol for recovery/recyclable. (for the package)	Symbole général de tri sélectif. (pour l'emballage)
	Recycling symbol for plastic in the package. Low density polyethylene	Symbole de recyclage du plastique dans l'emballage. Polyéthylène basse densité
	Recycling symbol for plastic in the package. Polypropylene	Symbole de recyclage du plastique dans l'emballage. Polypropylène
	Recycling symbol for plastic in the package. Polystyrene	Symbole de recyclage du plastique dans l'emballage. Polystyrène
	Indicates that the product conforms to the requirements of the Council Directive 93/42/EEC and of the other applicable Union legislation.	Indique que le produit est conforme aux exigences de la directive 93/42/CEE du Conseil et des autres législations applicables de l'Union.
	WEEE label The symbol indicates that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.	Marquage des DEEE Il s'agit d'un symbole indiquant que le produit ne doit pas être éliminé avec les déchets non triés, mais doit être envoyé dans des installations de collecte séparées destinées à la valorisation et au recyclage.
	EU Battery Directive Battery users must not dispose of batteries as unsorted general waste, but treat properly.	Directive européenne sur les batteries Les utilisateurs de batteries ne doivent pas jeter les batteries comme des déchets généraux non triés, mais les traiter correctement.

GENERAL SAFETY INFORMATION



CONTRAINDICATION

Ensuring the Safety of Patients and Operators

To prevent corneal damage, do not measure a patient with corneal disease or one who's had corneal surgery.

To prevent corneal damage, do not measure a patient wearing a contact lens.
Tell the patient to remove the contact lens.



WARNING

Ensuring the Safety of Patients and Operators

Be careful not to hit the patient's eyes or nose with the instrument during operation.

Preventing Electric Shocks and Fire

To avoid fire and electric shock, install the instrument in a dry place free of water and other liquids.

To avoid electric shock, do not insert metal objects into the instrument body through the vent holes or gaps.

To avoid fire and electric shock, do not put cups or other containers with liquids near the instrument.

Electric shock may cause burns or a possible fire. Turn the power switch OFF and unplug the power cord before replacing the fuses. Replace only with fuses of the correct rating.

To avoid fire in the event of an instrument malfunction, immediately turn OFF the power switch "O" and disconnect the power plug from the outlet if you see smoke coming from the instrument, etc. Don't install the instrument where it is difficult to disconnect the power plug from the outlet. Ask your dealer for service.

Do not attempt disassembling, rebuilding and/or repairs on your own. To avoid electric shock and fire

To avoid electrical shock, do not open the instrument. All service should be performed by a qualified service engineer.

- To avoid electric shock during fuse change, be sure to unplug the power cord before removing the fuse lid. Also, do not plug the power cord while the fuse lid is removed.
- Always use the attached fuse (T 3AL 250V). Using any other type may cause malfunction and/or fire.

Be sure to connect the power plug to an AC 3-pin receptacle equipped with grounding. Connection to a receptacle without grounding may cause fire and electric shock in case of short-circuiting.

Modification of this instrument is not permitted.

Misdiagnosis

CCT Adjustments are not supported by performance data.



CAUTION

Important caution

The following patients need extra attention.

- Patients with infectious disease such as Keratoconjunctivitis Epidemica

Ensuring the Safety of Patients and Operators

When operating the chinrest up/down switch, be careful not to pinch the patient's hand. The patient may be injured.

During alignment operation, please pay attention so that a patient's face does not move. If the face moves, there is a danger that the main body will touch the patient's face.

When operating the instrument use much care so that operator's finger or hand is not pinched between the reverse side of forehead rest, a measuring head and an ocular pressure measurement window. Or the operator may be injured.

The operator and support staff should be careful not to let the patient accidentally hold the chin rest. The patient may fall or the main unit may fall.

When using the social distancing operations, the end user should be careful not to hit the patient's eyes or nose with the instrument in a situation where they can directly check the patient's condition.

When using the social distancing operation via wireless communication, please use it in an environment where there are no obstacles or wireless interference. The patient may be injured.

- The instrument should be moved by two people holding the bottom of the device. Be sure to hold the bottom with two persons. To avoid injury, be aware of projections at the bottom. Carrying by one person may cause harm to his/her back or injury by falling parts. Also, holding areas other than the bottom and holding the External I/O terminal cover may cause injury, as well as damage to the instrument.
- To prevent damage and injuries, do not install the instrument on an uneven, unsteady or sloped surface.
- When setting an instrument on an instrument table, pay attention not to catch the patient's fingers between the instrument and the table.
- Do not operate a touch panel during barcode data entering by barcode reader. If you enter data when tapping the button on the touch panel, the barcode may not be read normally.
- Do not align, measure, or output data during barcode data entering by barcode reader. If you enter data during these operations, the barcode may not be read normally.
- Take care not to enter the wrong patient information. It may be mistaken for information from another patient.
- To avoid failure or potential injury, do not open the printer cover while the printer is in operation.
- To avoid potential injury in case of malfunction, including a paper jam, be sure to shut off the power before attempting to repair it.
- To avoid potential injury, do not touch the printer body including metal parts or the paper cutter, while the printer is in operation or when replacing the printer paper.
- Make sure to use the specified printing paper. If any printing paper other than specified is used, the printer might break, which could cause the product to be unusable.

Before measuring, check if there is any foreign matter on and around the measuring nozzle. If there is any, it may enter and damage the patient's eye during the measurement.

To avoid injury when operating the machine, be careful about the cover not to catch the fingers of the patient. Tell this to the patient, too.

- Before measuring, set the safety stop to prevent the measuring window glass from hitting the patient's eye. Set it respectively for the right and left eyes.
 - Set the safety stop from the side of the instrument. Setting operations from other positions, it is not easy to check positions of the eye and ocular pressure measuring window, may cause injury by touching ocular pressure measuring window to a patient.
 - To clean the measuring window glass, measuring nozzle and the glass inside the measuring nozzle, use ethanol. Using other chemicals may cause damage to the patient's eye during measurement.
 - Do not use tweezers or gauze, as these may scratch the lens and glass surfaces.
- Do not use or apply any aerosol-type cleaner near the instrument. If a drop of cleaner remains inside the measuring nozzle, the patient's eye may be injured during measurement.
- When remotely controlling, do not connect to the device from multiple terminals at the same time. The patient may be injured.

Preventing Electric Shocks and Burns

- To avoid injury caused by electric shock, do not open the cover. Ask your dealer for service.
- To avoid injury by electric shock when changing the fuse, turn off the power supply and pull out the power cord. Use the rated fuse.
- To avoid electric shock, do not handle the power plug with wet fingers.
- To avoid electric shock, do not touch the external connection terminal and the patient at the same time.

Ensuring Security

- When connecting the device and the external device via RS-232C or LAN, apply security updates to the external device, install anti-virus software, and take anti-virus measures.
- Do not connect a USB storage device that has not been checked for viruses by anti-virus software to the USB port of the device.
- When connecting the device and the external device via RS-232C or LAN, set the user ID and password on the external device.
- When outputting data from the device to a shared folder on an external device, set the appropriate user ID and password for the shared folder. To enable encrypted communication, set an encryption option on the shared folder.
- Please manage the SSID and password of wireless communication appropriately to prevent unauthorized access. There is a risk of data leak

Electromagnetic Compatibility (EMC)

This instrument has been tested (with 100/120/230V) and found to comply with IEC60601-1-2:2014(Ed.4.0). This instrument radiates radio frequency energy within standard and may affect other devices in the vicinity. If you have discovered that turning on/off the instrument affects other devices, we recommend you change its position, keep a proper distance from other devices, or plug it into a different outlet. Please consult your authorized dealer if you have any additional questions.

HOW TO USE THIS MANUAL

- Read the instructions on pages 10 to 14 before using the machine.
- Regarding connection to various devices, see "CONNECTING EXTERNAL I/O TERMINALS" on page 33.
- If you would like an overview of the system, begin by reading "BASIC OPERATIONS"(page 38).
- For setting various functions, see "SETTING FUNCTIONS ON THE SETUP SCREEN" on page 81.

GENERAL MAINTENANCE INFORMATION

Do not perform any maintenance work while the instrument is in use on a patient.

USER MAINTENANCE

To maintain the safety and performance of the equipment, never attempt to do maintenance except for the items specified below. For details, follow the instructions.

FUSE CHANGE

For details, See "FUSE CHANGE" on page 130.

CLEANING THE MEASURING WINDOW GLASS

For details, See "CLEANING THE INSTRUMENT" on page 125.

CLEANING THE NOZZLE AND WINDOW GLASS INSIDE THE NOZZLE

Regarding the measuring nozzle and the glass surface inside the measuring nozzle, cleaning is allowed. For details, see "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" on page 126.

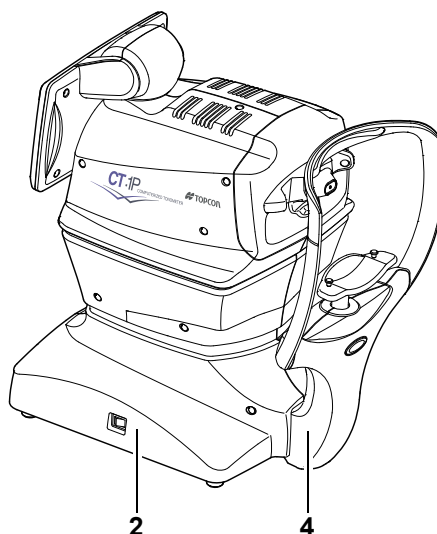
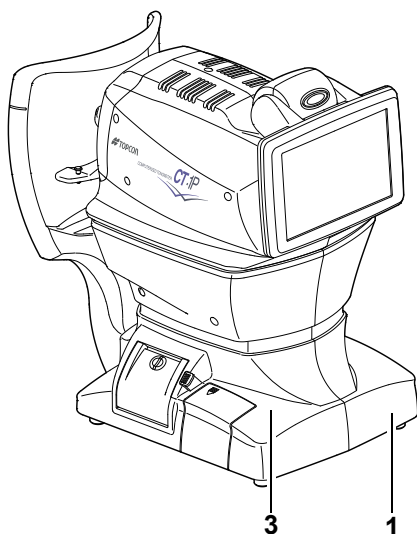
DISCLAIMERS

- TOPCON is not responsible for damage due to fire, earthquakes, actions or inactions of third persons or other accidents, or damage due to negligence and misuse by the user and any use under unusual conditions.
- TOPCON is not responsible for damage derived from inability to properly use this equipment, such as loss of business profits and suspension of business.
- TOPCON is not responsible for damage caused by operations other than those described in this manual.
- The device does not provide a diagnosis of any condition or lack thereof or any recommendations for appropriate treatment. The relevant healthcare provider is fully responsible for all diagnosis and treatment decisions and recommendations.

POSITIONS OF WARNING AND CAUTION INDICATIONS

To secure safety, this equipment provides warnings.

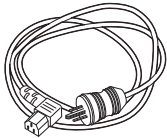
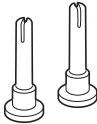
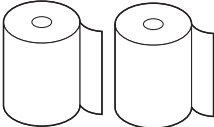
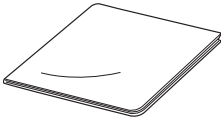
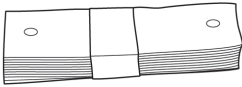

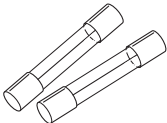

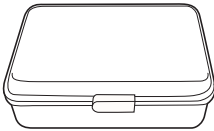
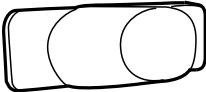
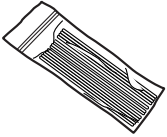


Correctly use the equipment following these warning instructions. If any of the following marking labels are missing, please contact your dealer or TOPCON at the address stated on the back cover.



No.	Label	Meaning	Signification
1		WARNING Be careful not to hit the patient's eyes or nose with the instrument during operation.	ATTENTION Prendre garde de ne pas frapper les yeux ou le nez du patient avec l'instrument pendant l'opération.
2		WARNING Electric shock may cause burns or a possible fire. Turn the power switch OFF and unplug the power cord before replacing the fuses. Replace only with fuses of the correct rating.	ATTENTION Un choc électrique causerait une brûlure ou un incendie. Mettre l'interrupteur sur ARRET et débrancher la prise avant de remplacer des fusibles. Utiliser seulement avec des fusibles de la classe correcte.
3		CAUTION When operating the chinrest up/down switch, be careful not to pinch the patient's hand. The patient may be injured.	PRÉCAUTION Prendre garde de ne pas pincer la main du patient en opérant le commutateur haut/bas du support de jugulaire. Le patient pourrait être blessé.
		CAUTION To avoid injury caused by electric shock, do not open the cover. Ask your dealer for service.	PRÉCAUTION Ne pas ouvrir le couvercle pour éviter les blessures causées par un choc électrique. Demander au revendeur d'effectuer le service.
4		Degree of protection against electric shock : TYPE B APPLIED PART	Degré de protection contre les chocs électriques : TYPE B PARTIE D'APPLICATION

STANDARD ACCESSORIES

The following are standard accessories. Make sure that all these items are included (the quantity is indicated in parenthesis).

<p>Power cord (1)</p> 	<p>Chinrest pin (2)</p> 
<p>Printer paper (2)</p> 	<p>Monitor cleaner (1)</p> 
<p>Chinrest tissue (1)</p> 	<p>Dust cover (1)</p> 
<p>Fuse (2)</p> 	<p>User Manual, Instruction Manual, Unpacking and Assembling, Cleaning Procedure (1 each)</p> 
<p>Accessory case (1)</p> 	<p>Measuring window cap (1)</p> 
<p>Applicator (1)</p> 	<p>Blower (1)</p> 
<p>Plastic container (1)</p> 	

- CT-1P Web GUI (Firmware version 3.03~).
For details on how to set the CT-1P social distancing operation, please contact your dealer or the offices.
- * By the case a plurality of power cords may have been packed.

COMPONENTS

COMPONENT NAMES

Main Body unit

Measuring head

Control panel

Printer cover open switch

Printer cover

External I/O terminal cover

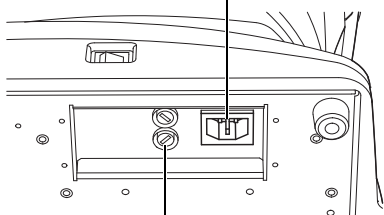
Up and down position check seal

The up and down position of the measuring head can be checked. The central position of the up and down triangle shows the central position of the up and down direction of the measuring head.



Power unit

Power inlet



Fuse folder

POWER switch

Chinrest unit

Forehead rest*

Measuring window

Eye height mark

Chinrest pin

Chinrest*

Measuring window cap




* Parts of contact the patient: B type mounting part

COMPOSITION OF PARTS WHICH CONTACT THE HUMAN BODY

Forehead rest : Silicone rubber

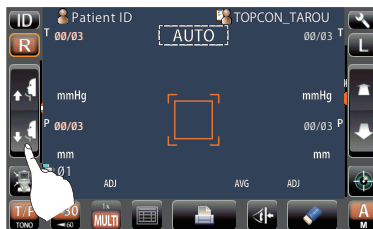
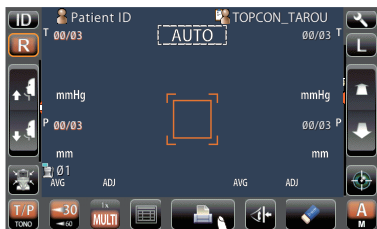
Chinrest : Acrylonitrile butadiene styrene resin

OPERATION METHOD OF CONTROL PANEL

 NOTE	<ul style="list-style-type: none"> • The control panel is a touch panel. Do not use any sharp tools; e.g. ball point pen. • Avoid tapping to different points simultaneously on the control panel.
---	--

Tap → To select any relevant item.

Continue to press → Used for continuous moving.
(Moving of chinrest and measuring head)



Touch the screen softly with a finger.

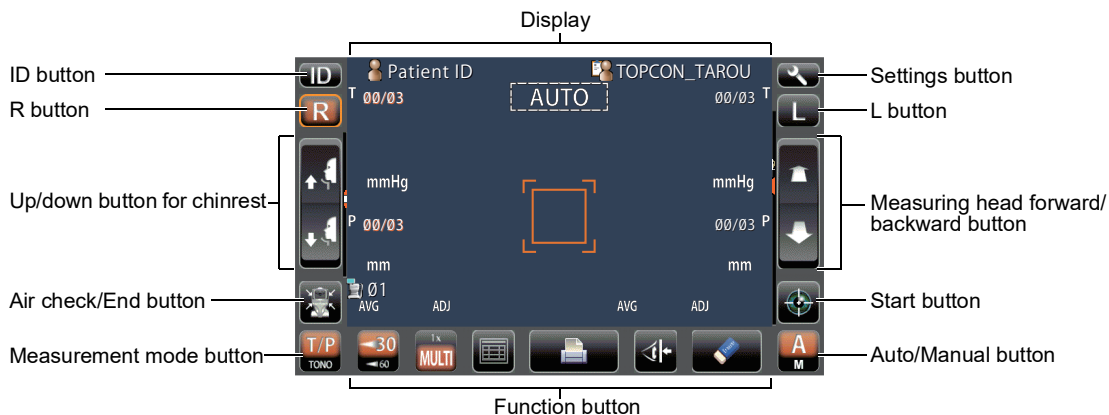
Continue to touch the screen softly with a finger.

CONTROL PANEL COMPONENTS

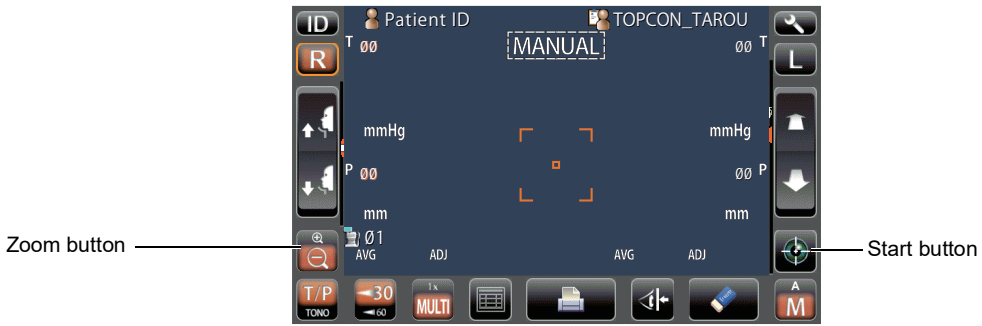
The control panel is designed as a touch panel for performing various operations and settings. It displays images and shows information, including set conditions and measurement results.

CT-1P

AUTO MODE

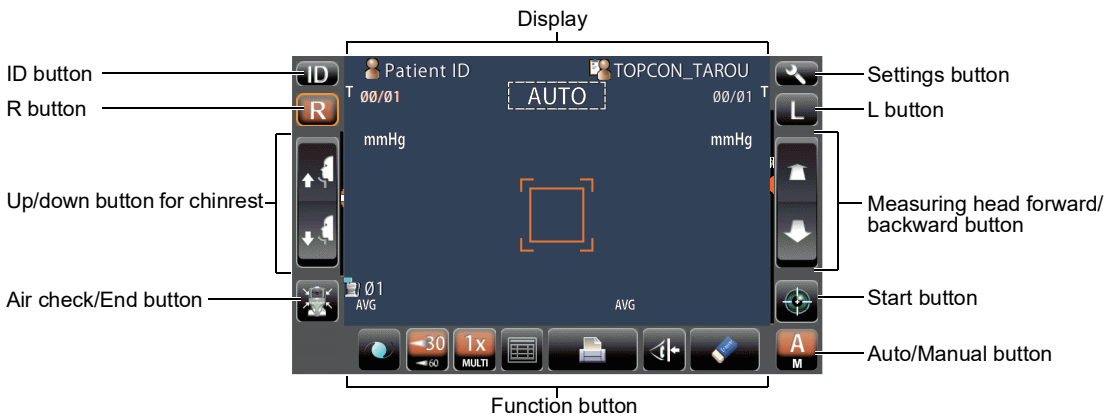


MANUAL MODE














CT-1

AUTO MODE



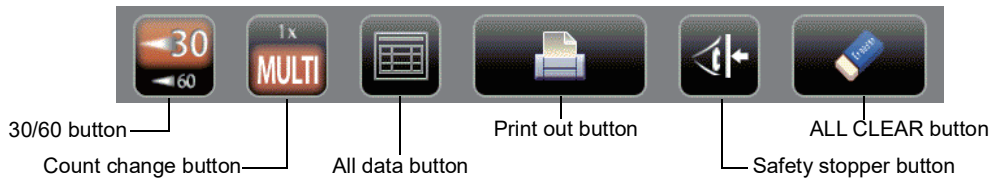
MANUAL MODE



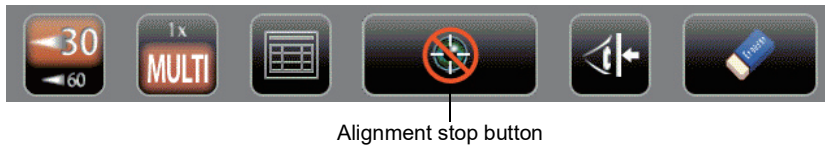
-  ID button Input the patient ID (up to 13 characters) and operator ID (up to 13 characters). However, if no patient ID is inputted, the patient No. of each patient is allocated automatically. (See page 122 for details.)
-  Measurement mode button..... Selects a measurement mode from TONO and T/P. (only in CT-1P)
-   R button/L button Selects the right/left eye. By tapping the button, the main body moves to the selected direction. The selected button is framed in orange. The layout where the R/L button is displayed reverses according to the position of the control panel.
-  Up/down button for chinrest... Moves the chinrest up/down.
-  Air check/End button Displayed under Auto mode: Selects Air check or End operation. Air check operation checks that the measurement system of the instrument operates properly. End operation is to move the chinrest and measuring head to the measurement last position.
-  Zoom button..... Displayed under Manual mode: Enlarges the patient's eye display.
-  Forward/Backward button for measuring head
..... Moves the measuring head closer to/away from the patient's eye.
-  Start button Starts measurement.
-  Auto/Manual button..... Selects Auto/Manual mode (A: Auto mode, M: Manual mode). The name of the selected mode (Auto/Manual) is displayed on the control panel.
-  Settings button..... Displays the SETUP screen.

FUNCTION BUTTON

UNDER MEASUREMENT STANDBY

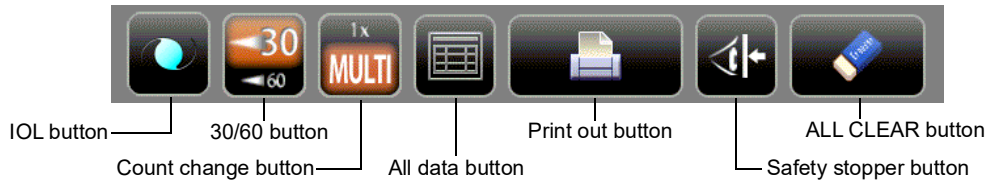


DURING MEASUREMENT

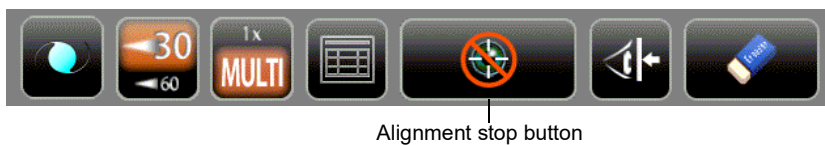



FUNCTION BUTTON (CT-1)

UNDER MEASUREMENT STANDBY



DURING MEASUREMENT



-  IOL button(Only in CT-1) .If aligning is impossible in measuring an IOL-inserted eye, changing the LED brightness may allow the measurement. The LED brightness can be changed with the up/down button displayed by tapping this button.
- Before shipment, the default setting is 40.0%.
 - * Please do not use it other than an IOL-inserted eye.



When the IOL button is selected, "IOL" is displayed on the control panel and the button is framed in orange.

-  30/60 button Switches between 1-30 range and 1-60 range.



Count change button Switches the number of measurements in the AUTO measurement as follows:

- Measures the number of times as previously set.
- One time measurement (Before shipment, the default setting is "one time measurement")

When R/L move mode is set to Full Auto or Auto(RL), after measuring the first eye, the main body automatically moves to the settings for the other eye.



All data button Displays all measurement data on the screen.



Print out button Displays on measurement stand-by and prints measurement results. Tap the button when no measurement data is present to feed the paper.



Safety stopper button Switches to the setting screen of the nozzle limit position to prevent the measuring window glass from hitting the patient's eye during the measurement.



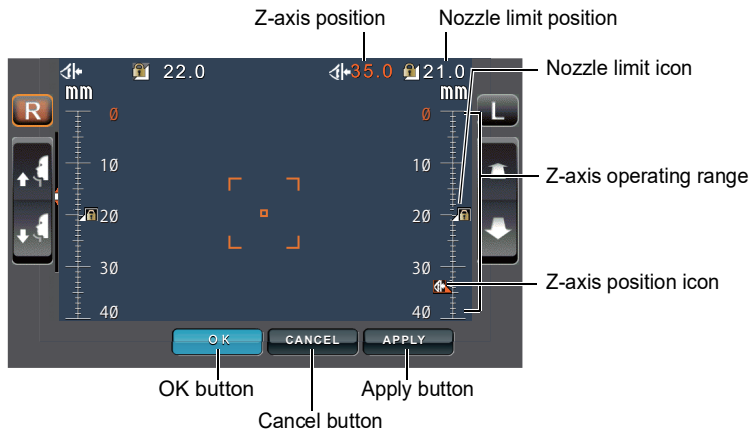
ALL CLEAR button Clears all measurement data.



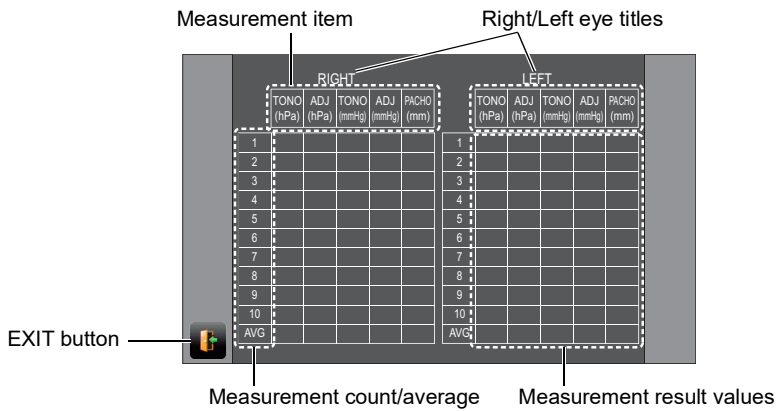
Alignment stop button

..... Displayed during a measurement, the alignment operation is stopped and the measuring head moves backward.

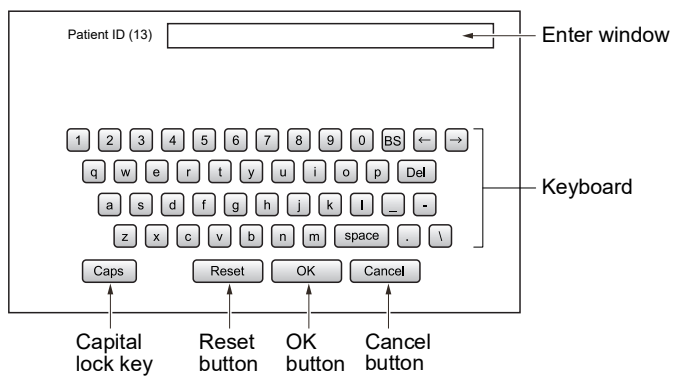
SAFETY STOPPER SCREEN



ALL DATA SCREEN

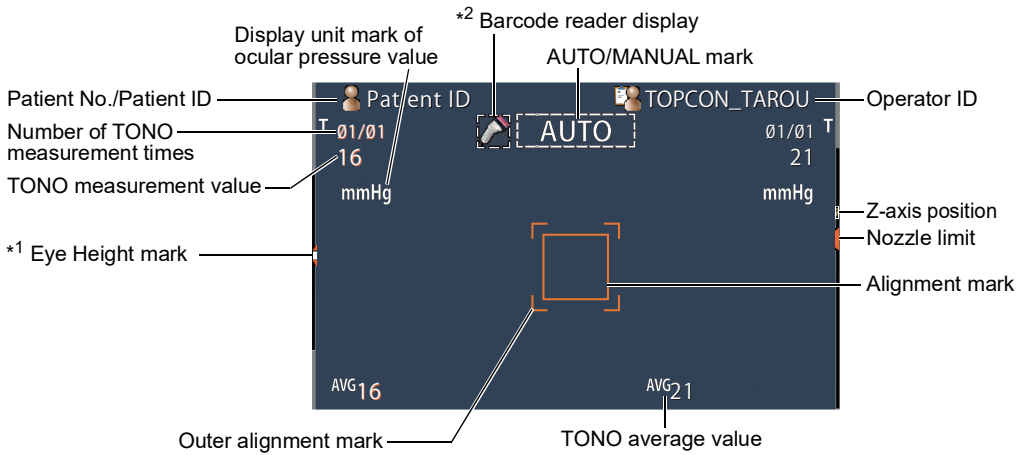


PATIENT ID INPUT SCREEN



CT-1

MEASUREMENT SCREEN



*1 Eye Height mark: Shows the position of the eye height mark on the chinrest.

*2 Displayed when the barcode reader is connected.

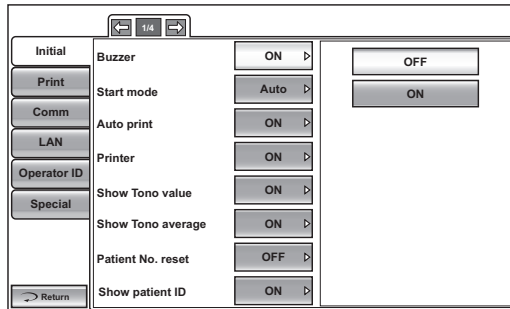


: Barcode reader is in readable.

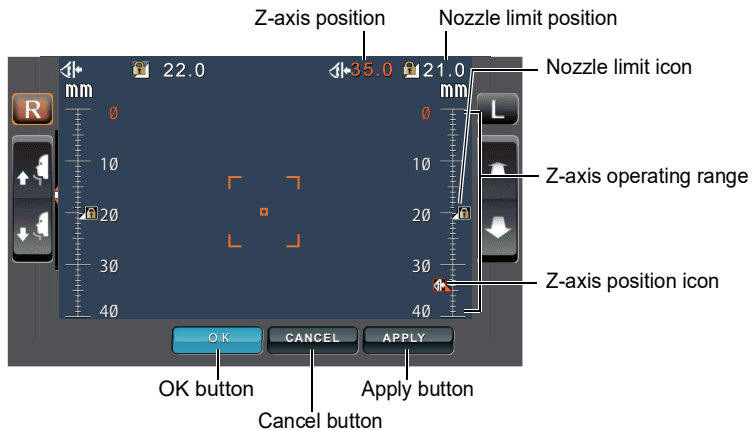


: Barcode reader is inhibited to read. (During measurement, printing, data output)

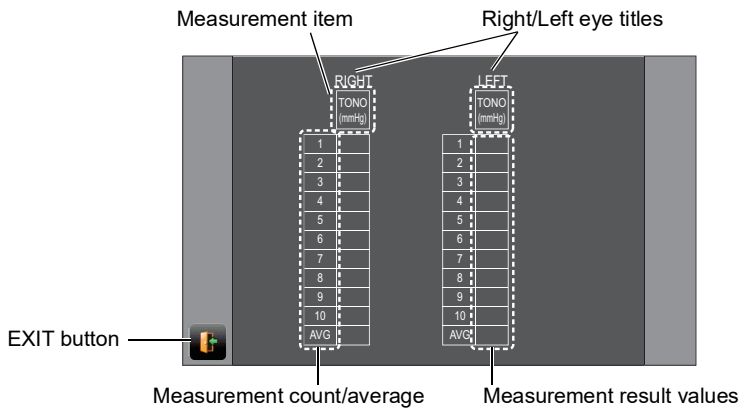
SETUP SCREEN



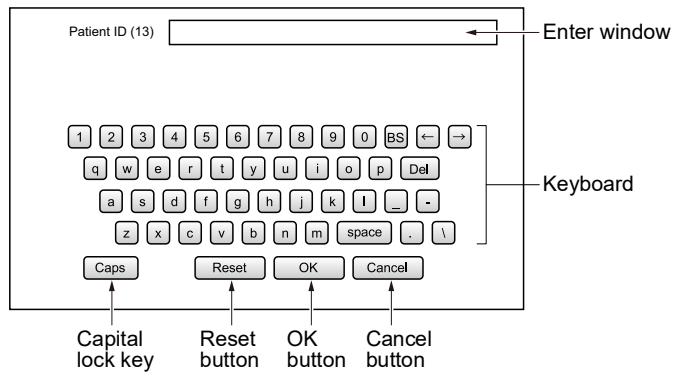
SAFETY STOPPER SCREEN



ALL DATA SCREEN




PATIENT ID INPUT SCREEN




PRINTER OUTPUT

Printed example when "Printer order" of "Print" is set to "SIMPLE"

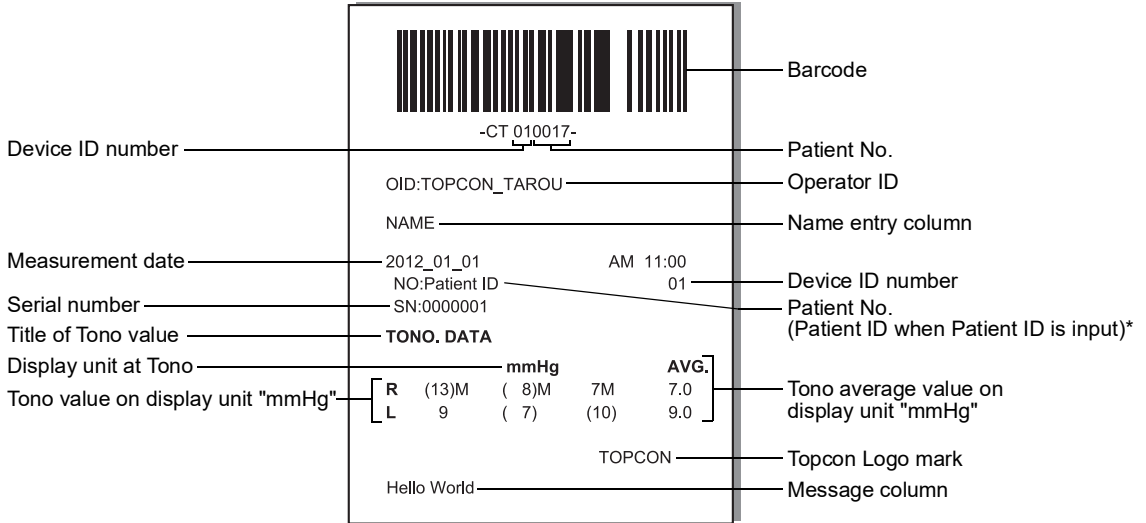
CT-1P

						Barcode
Device ID number	-CT 010017-					Patient No.
	OID:TOPCON_TAROU					Operator ID
	NAME					Name entry column
Measurement date	2012_01_01		AM 11:00			Device ID number
Serial number	NO:Patient ID		01			Patient No. (Patient ID when Patient ID is input)
	SN:0000001					
Title of Tono value	TONO. DATA					
Display unit at Tono	hPa					AVG.
Tono value on display unit "hPa"	[R (13)M (8)M 7M 7.0					Tono average value on display unit "hPa"
Result of IOP adjustment by CCT	[L 9 (7) (10) 9.0					Average value of adjusted measurement value
Adjusted measurement value	[R (13)M (8)M 7M 7.0					
	[L 9 (7) (10) 9.0					
Title of Pacho value	PACH. DATA					
Display unit at Pacho	um					AVG.
Measured value of CCT	[R 509M 518M 526M 517					Average value of CCT
	[L 531 523 512 518					
Title of IOP ADJ Formula	IOP ADJ FORMULA					Center CCT Base/ Adjustment Coefficient
	A : 545 B : 500					
				TOPCON		Topcon Logo mark
	Hello World					Message column

- As for the patient No., the result of the printing will differ depending on whether the patient ID is inputted or not inputted.
 Input : Patient ID is printed.
 Not input : Patient No. (starts from 0001, automatically added +1 upon completion of measurement) is printed.

 NOTE	<ul style="list-style-type: none"> The "M" mark is printed on the value measured by Manual mode or on the value measured by using the start button in Auto mode. (In the error of ERR, OVER, etc., the "M" mark is not printed.) The value with low reliability is outputted with the parenthesis notation.
---	---

CT-1



* As for the patient No., the result of the printing will differ depending on whether the patient ID is inputted or not inputted.

Input : Patient ID is printed.

Not input : Patient No. (starts from 0001, automatically added +1 upon completion of measurement) is printed.




NOTE

- The "M" mark is printed on the value measured by Manual mode or on the value measured by using the start button in Auto mode. (In the error of ERR, OVER, etc., the "M" mark is not printed.)
- The value with low reliability is outputted with the parenthesis notation.

Printed example when "Printer order" of "Print" is set to "R/L"

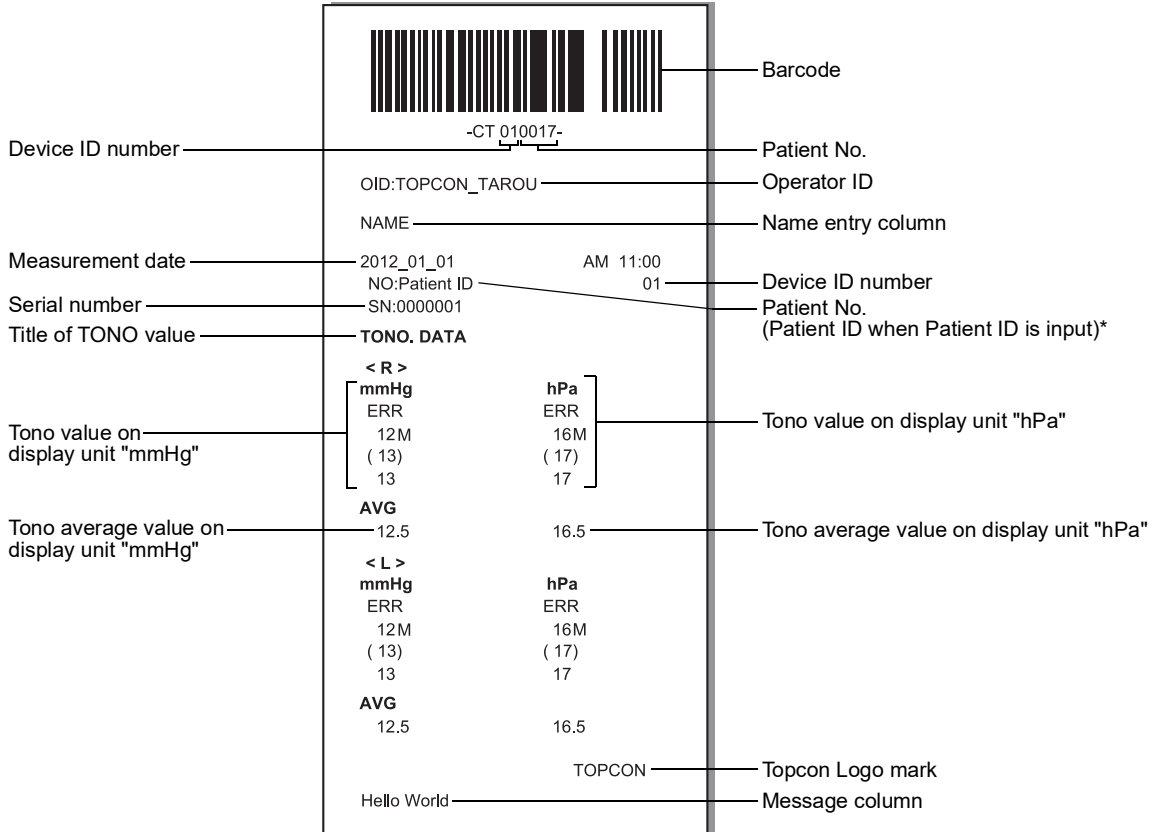
CT-1P



-CT_010017-

Device ID number	2012_01_01	AM 11:00	Patient No.
	NO:Patient ID	01	Device ID number
Serial number	SN:0000001		Patient No. (Patient ID when Patient ID is input)
Title of TONO value	TONO. DATA		
Adjusted measurement value "mmHg"	< R >		
	mmHg	ADJ.	hPa
	ERR	ERR	ERR
Tono value on display unit "mmHg"	12	12	16M
	(13)	(13)	(17)
	13	13	17
Average value of adjusted measurement value	AVG		ADJ.
Tono average value on display unit "mmHg"	12.5	12.5	ERR
			ERR
Title of Pacho value	PACH. DATA		
Measured value of CCT	< R >		
	ERR		
	0.5 1 1 M		
	0.5 1 0		
	0.5 1 0		
Average value of CCT	AVG.		
	0.5 1 0		
	TONO. DATA		
	< L >		
	mmHg	ADJ.	hPa
	ERR	ERR	ERR
	12	12	16M
	(13)	(13)	(17)
	13	13	17
	AVG		ADJ.
	12.5	12.5	ERR
			ERR
	PACH. DATA		
	< L >		
	mm		
	ERR		
	0.5 1 1 M		
	0.5 1 0		
	0.5 1 0		
	AVG.		
	0.5 1 0		
Title of IOP ADJ Formula	IOP ADJ FORMULA		
	A: 545 B: 500		
	TOPCON		
	Hello World		

CT-1



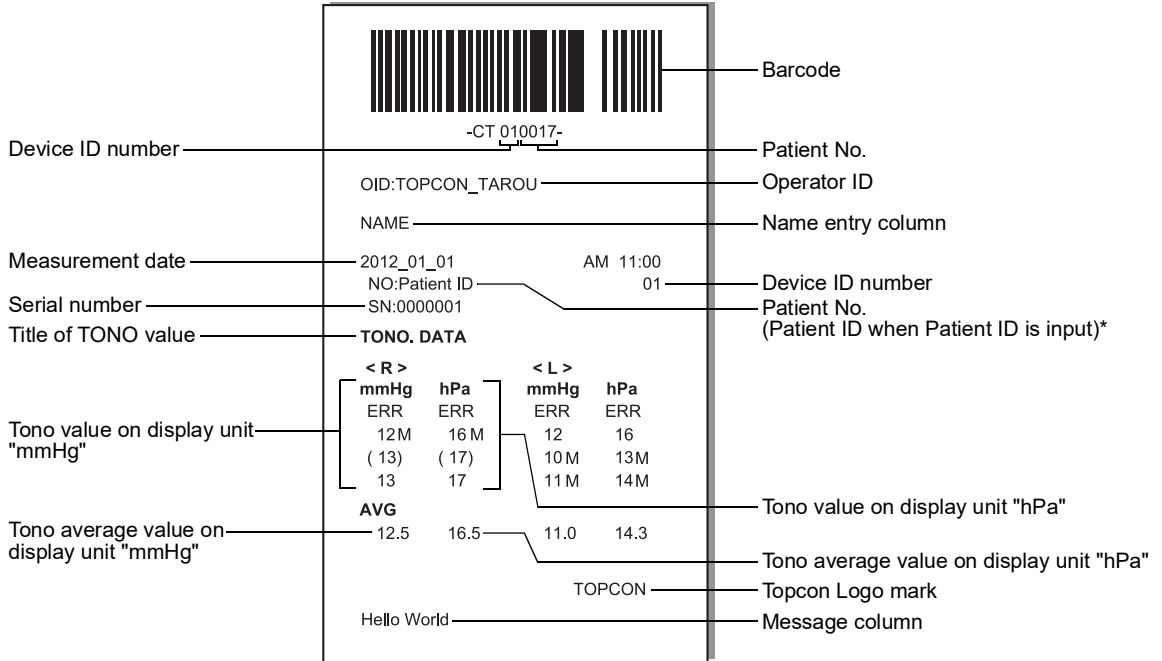
Printed example when "Printer order" of "Print" is set to "DATA"

CT-1P

The diagram shows a printed output from a CT-1P device. It includes a barcode at the top, followed by patient and operator information, measurement date and time, device ID, and patient ID. The main data is organized into sections: TONO DATA (mmHg and hPa), PACH.DATA (mm), and IOP ADJ FORMULA. Each section contains measured values and average values. The output ends with the TOPCON logo and a message column.


Field	Value
Barcode	[Barcode]
Device ID number	-CT_010017-
Patient No.	01
Operator ID	TOPCON_TAROU
Name entry column	NAME
Measurement date	2012_01_01
Time	AM 11:00
Device ID number	01
Patient No.	NO:Patient ID
Patient No. (Patient ID when Patient ID is input)	SN:0000001
Title of TONO value	TONO. DATA
Device ID number	< R > mmHg
Tono value on display unit "mmHg"	ERR ERR 12M 12M (13) (13) 13
Tono average value on display unit "mmHg"	AVG 12.5 12.5 11.0 11.0
Device ID number	< L > mmHg
Tono value on display unit "hPa"	ERR ERR 16M 16M (17) (17) 17
Tono average value on display unit "hPa"	AVG 16.5 16.5 14.3 14.3
Title of Pacho value	PACH.DATA
Device ID number	< R > mm
Measured value of CCT	ERR ERR 0.511M 0.510 0.510
Average value of CCT	AVG 0.510
Device ID number	< L > mm
Measured value of CCT	ERR ERR 0.510 0.509 M 0.508 M
Average value of CCT	AVG 0.509
Title of IOP ADJ Formula	IOP ADJ FORMULA
Center CCT Base/ Adjustment Coefficient	A: 545 B: 500
Topcon Logo mark	TOPCON
Message column	Hello World

CT-1

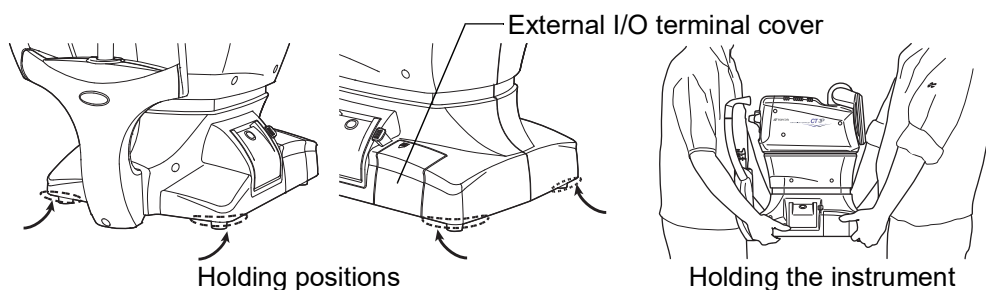


PREPARATIONS



INSTALLATION

 CAUTION	<ul style="list-style-type: none">• The instrument should be moved by two people holding the bottom of the device. Be sure to hold the bottom with two persons. To avoid injury, be aware of projections at the bottom. Carrying by one person may cause harm to his/her back or injury by falling parts. Also, holding areas other than the bottom and holding the External I/O terminal cover may cause injury, as well as damage to the instrument.• To prevent damage and injuries, do not install the instrument on an uneven, unsteady or sloped surface.• When setting an instrument on an instrument table, pay attention not to catch the patient's fingers between the instrument and the table.
--	--

- 1 Firmly hold the instrument at the position shown below and place it on the automatic instrument table.

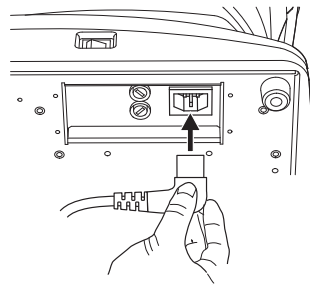


CONNECTING POWER CORD



 WARNING	Be sure to connect the power plug to an AC 3-pin receptacle equipped with grounding. Connection to a receptacle without grounding may cause fire and electric shock in case of short-circuiting.
 CAUTION	To avoid electric shock, do not handle the power plug with wet fingers.

- 1 Make sure the POWER switch of the instrument is OFF.
- 2 Tilt the body slowly so that the POWER switch is on top and the power inlet at the bottom can be seen.

- 3** Connect the power cord to the Power inlet.
- 4** Insert the power cord plug into the 3-pin AC grounding receptacle.



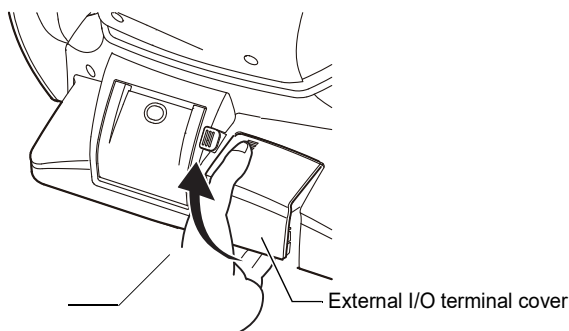
CONNECTING EXTERNAL I/O TERMINALS

 CAUTION	<p>To avoid electric shock, do not touch the external connection terminal and the patient at the same time.</p>
 NOTE	<p>When connecting this product with a commercial personal computer, use one conforming to IEC62368-1, with a separation unit.</p>

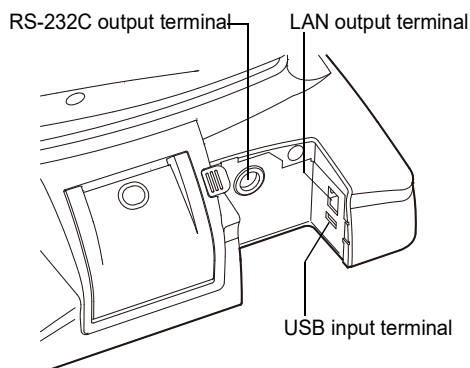
DATA OUTPUT

This product can be connected to a personal computer (PC) and other external devices via the RS-232C or LAN.

- 1** Remove the External I/O terminal cover by pulling up as follows.




- 2** Connect the connection cable to the output terminal of the instrument.




- 3** Connect the other end of the connection cable to the PC, etc.
- 4** Replace the External I/O terminal cover.

DATA INPUT


 CAUTION	<ul style="list-style-type: none">• Do not operate a touch panel during barcode data entering by barcode reader. If you enter data when tapping the button on the touch panel, the barcode may not be read normally.• Do not align, measure, or output data during barcode data entering by barcode reader. If you enter data during these operations, the barcode may not be read normally.• Take care not to enter the wrong patient information. It may be mistaken for information from another patient.
--	--

This product can be connected to a barcode reader and other external devices via USB.


- 1** Connect the connection cable to the input terminal of the instrument.


 NOTE	<p>Please use a barcode reader with the following interface specifications.</p> <ul style="list-style-type: none">• Connector shape : USB (type A)• Interface : USB• Power supply : USB bus power <p>Please connect USB devices while the power switch of this instrument is OFF. It may not correctly recognize USB devices if this instrument is in operation.</p>
---	--

- 2** Connect the other end of the connection cable to the external device.

 NOTE	For questions about connections, contact your TOPCON dealer.
---	--

PRINTER PAPER SETTING

 CAUTION	<ul style="list-style-type: none">• To avoid failure or potential injury, do not open the printer cover while the printer is in operation.• To avoid potential injury in case of malfunction, including a paper jam, be sure to shut off the power before attempting to repair it.• To avoid potential injury, do not touch the printer body including metal parts or the paper cutter, while the printer is in operation or when replacing the printer paper.• Make sure to use the specified printing paper. If any printing paper other than specified is used, the printer might break, which could cause the product to be unusable.
--	--

 NOTE	If you insert the printer paper backwards, nothing is printed.
---	--

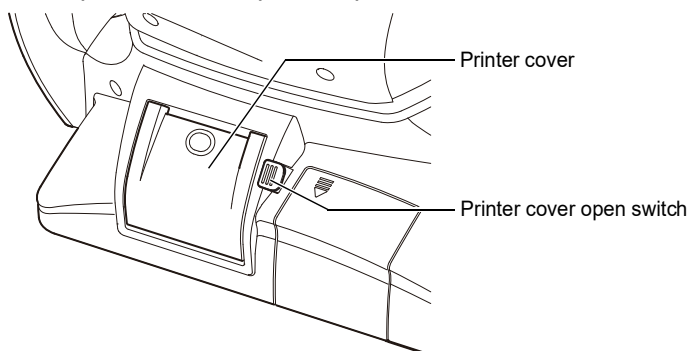
- For printing paper, use the following paper specified by TOPCON.

Item Name	Item Code
Printing Paper	44800 4001

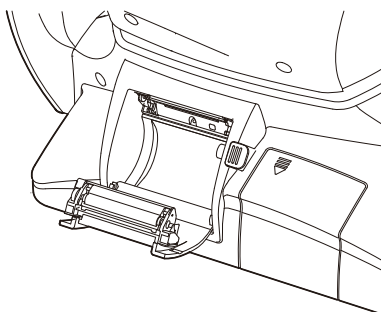
Product No.: TP-50K-J-R (manufactured by Nippon Paper Industries Co., Ltd.)
(Paper Width: 58mm, Roll Outer Diameter: ϕ 48mm or less)

When ordering any consumable, contact our agent where you purchased the product, or our particular department as indicated in this manual with the Item Name, Item Code and Quantity.

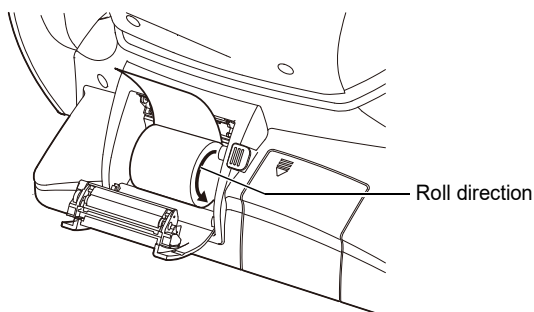
- 1** Press the printer cover open switch to open the printer cover.



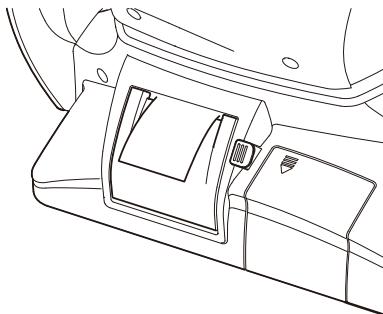
- 2** Open the printer cover to the limit.



- 3** Insert the printer paper in the direction shown below and pull out the paper end to your side by 7 to 8cm.



- 4 Bring the paper into the center, then close the printer cover.

**NOTE**

In case the printer cover is not firmly closed, printing will not start.

RECOVERY FROM POWER SAVE STATUS

This instrument adopts the power save system for saving electric power. When the machine is not operated for a set time, the control panel becomes a screensaver.

- 1 Tap the control panel.

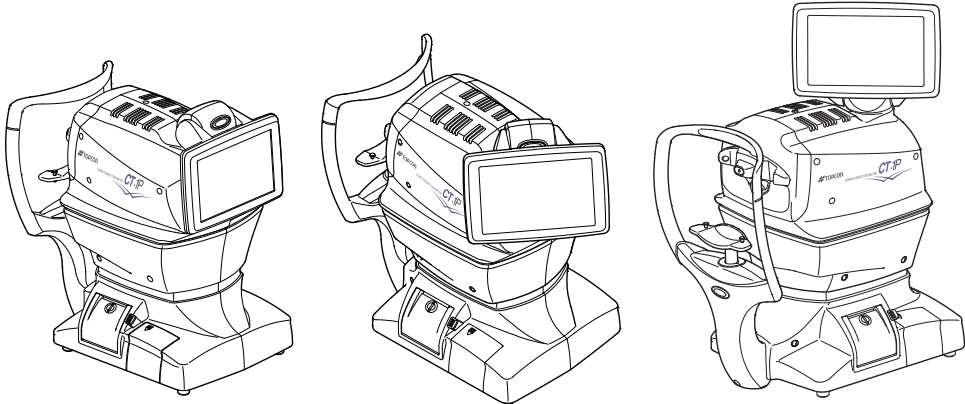
In a few seconds, the measurement screen is displayed and measurement is enabled.

**NOTE**

The time to start the power save status can be changed in the initial setting "SETTING THE AUTO POWER SAVE" (see page 97).

ADJUSTING THE CONTROL PANEL POSITION

The control panel may be positioned by swinging and tilting the monitor to your desired position. Touching the control panel controls operations including chinrest movements, alignment and measurement.




NOTE

- The layout of (R) button/(L) button is reversed according to the position of the control panel.
- The moving direction by tapping is changed according to the position of the control panel.
- The moving direction when pushing continuously on control panel changes according to the initial setting of "SETTING THE XZ MOTOR DIRECTION". (Refer to P.107)



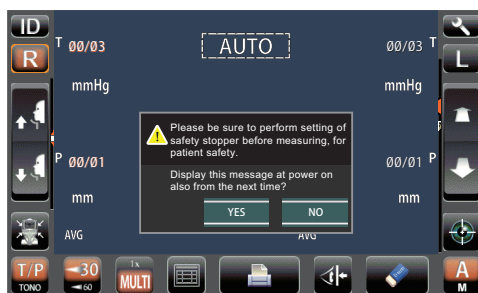
BASIC OPERATIONS

PREPARATION BEFORE MEASUREMENT


 NOTE	Do not put the patient's face on the chinrest until the power is on.
---	--

TURNING ON THE INSTRUMENT

- 1** Make sure the power cord is connected properly.
For the details of the connection, refer to "CONNECTING POWER CORD" on page 32.
- 2** Turn on the **POWER** SWITCH.
- 3** The title screen and measurement screen are displayed and the confirmation message of setting of safety stopper is displayed in a few seconds.



- 4** Tap either the **YES** button or **NO** button, return to the Measurement screen.

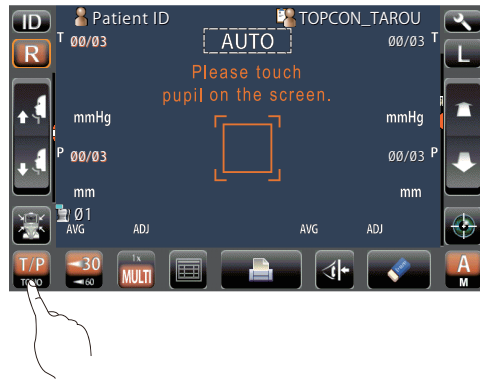
 NOTE	<ul style="list-style-type: none">• Refer to 42 Page for SETTING THE SAFETY STOPPER.• If "YES" is tapped, the confirmation message of setting of safety stopper is displayed upon power ON from next time.• If "NO" is tapped, the confirmation message of setting of safety stopper is not displayed upon power ON from next time.
---	---


SELECTING THE MEASUREMENT MODE

On this product, measurement mode can be changed between TONO (TONO measurement) and T/P (TONO/PACHO continuous measurement).


- 1 Confirm the Measurement screen.
- 2 Tap the **MEASUREMENT MODE** button on the control panel and select a measurement mode. Indication of the **MEASUREMENT MODE** button is changed.

TONO: TONO measurement
T/P: TONO/ PACHO continuous measurement

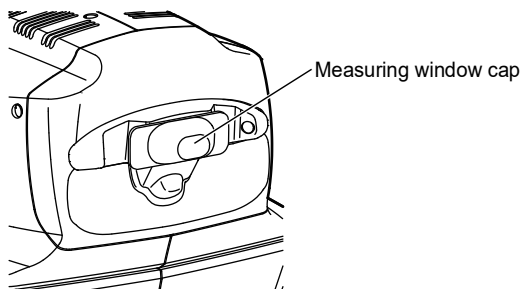


 NOTE	Only in CT-1P.
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CHECKING THE MEASURING NOZZLE

 CAUTION	Before measuring, check if there is any foreign matter on and around the measuring nozzle. If there is any, it may enter and damage the patient's eye during the measurement.
--	---

- 1 Remove the measuring window cap.

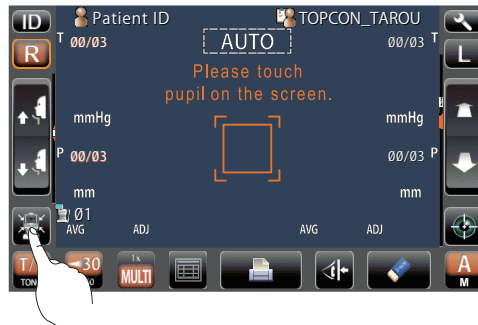


- 2 Check if there is any foreign matter on and around the measuring nozzle. If there is any, turn OFF the **POWER** SWITCH, clean it off and then turn ON the **POWER** SWITCH. For cleaning, see "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" on page 126.

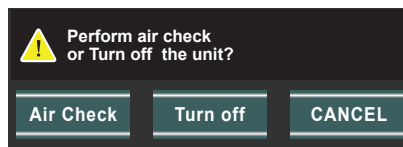
AIR CHECK

This instrument is equipped with a function for checking correct operations of the measurement system inside the instrument.

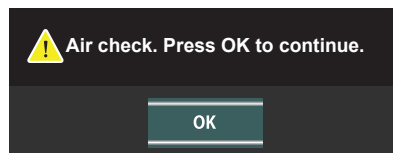
- 1 On the measurement standby screen of AUTO mode, tap the **Air check/End** button.




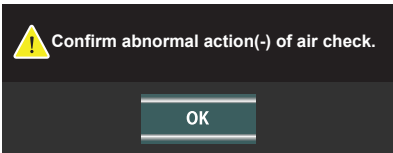
- 2 Then, the confirming message of Air check/End operation is displayed.




- 3 Press the **Air Check** button. Then, air is blown out from the measuring nozzle automatically.
- 4 Make sure the message box of "Air check. Press OK to continue." is displayed on the control panel.




- 5 Press the **OK** button, return to Measurement screen.

 <p>NOTE</p>	<p>If abnormal action(+) or abnormal action(-) is displayed, the condition is not normal. Check if there is any object before the measuring nozzle.</p> <p>If there is any, remove it, press the OK button and do the check again.</p> <p>If there is no object, a failure is suspected. Turn the POWER switch to OFF, unplug the power cord, and call your dealer or TOPCON at the address printed on the back cover of this manual.</p> <div style="text-align: center;">  </div>
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PATIENT POSITIONING

 CAUTION	<ul style="list-style-type: none"> • To avoid electric shock, do not touch the external connection terminal and the patient at the same time. • To avoid injury when moving the UP/DOWN button for chinrest, be careful not to catch the patient's fingers. Tell this to the patient, too. • To avoid injury when operating the machine, be careful about the cover not to catch the fingers of the patient. Tell this to the patient, too.
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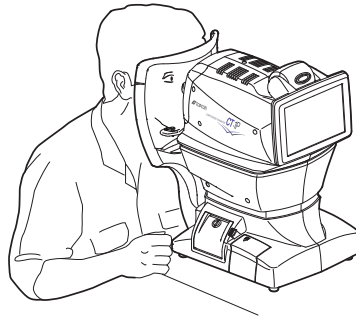
 NOTE	<ul style="list-style-type: none"> • Adjust the height of the adjustable instrument table so that the patient can sit on the chair comfortably. Otherwise, correct measurement values may not be obtained. • Before starting measurement, explain the functioning so patients are not surprised by the air puff. • When operating the instrument, be careful that the instrument does not touch the patient's nose. If touched, clean the instrument following "CLEANING THE MEASURING WINDOW GLASS" on page 125. • If no patient ID is registered, a "patient No." is assigned automatically in order of examination.
---	--

- 1 Check the measurement screen.
- 2 Make sure that the eye height mark is at the center position as explained below.
If the eye height mark is above the center position, press the lower side of the control panel display, or if it is below the center position, press the upper side of the control panel display, so as to move the eye height mark to the center position.

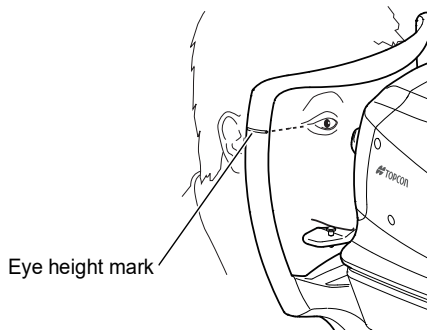


- 3 Have the patient sit in front of the instrument.
- 4 Adjust the adjustable instrument table or the chair height for the patient to put his/her chin on the chinrest comfortably.

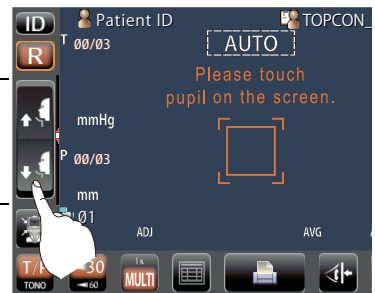
- 5 Place the patient's chin on the chinrest and check that his/her forehead is touching to the forehead rest.



- 6 Press the **UP/DOWN** button to adjust the chinrest height until the eye height mark of the chinrest reaches the same height as the patient's eye.



Up/down button for chinrest



SETTING THE SAFETY STOPPER



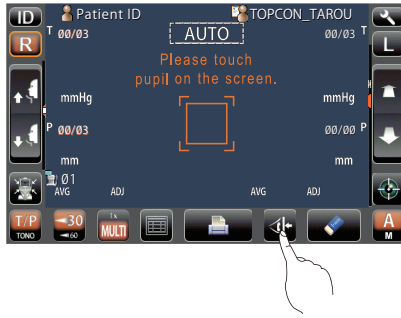
CAUTION

- Before measuring, set the safety stop to prevent the measuring window glass from hitting the patient's eye. Set it respectively for the right and left eyes.
- Set the safety stop from the side of the instrument. Setting operations from other positions, where checking of the eye position is not easy, may cause injury.

- 1 Select the right/left eye by tapping the **(R)** button/**(L)** button.

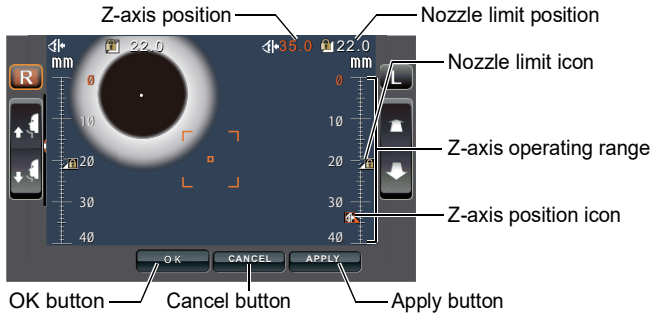


- 2 Tap the **Safety Stopper** button on the control panel.



	<p>NOTE</p>	<p>Set the nozzle limit individually for the right/left eye. If measurement is performed by setting the safety stopper only for one eye, or without setting the safety stopper at all, the measurement window glass might hit the patient's eye.</p>
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- 3 When the **Safety Stopper** button is tapped, the Safety Stopper screen is called up.




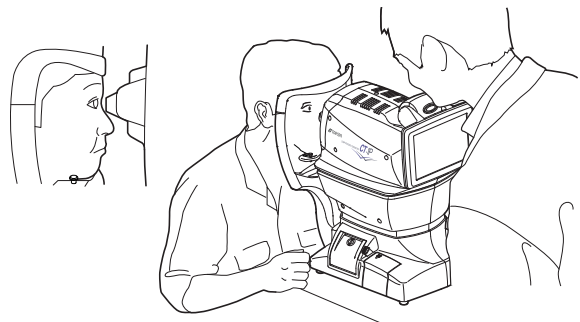
	<p>NOTE</p>	<p>By the position of a control panel, arrangement of the (R) button/(L) button, Z-axis position, nozzle limit position, Z-axis operating range, nozzle limit icon, and Z-axis position icon is reversed.</p>

- 4** Operating the control panel, set the center of the measurement screen nozzle to the cornea center of the patient.

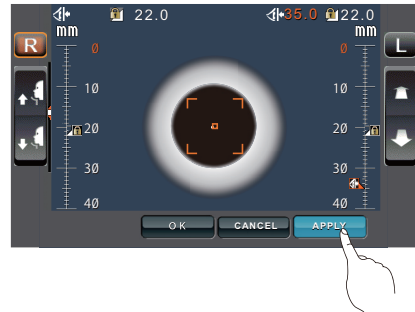
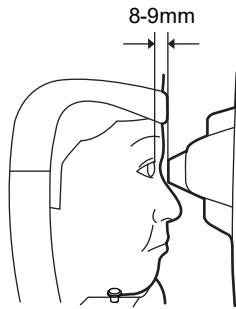


- 5** By tapping the **Measuring Head Forward/Backward** button, adjust the position of the z-axis position icon for the right/left eyes.



 NOTE	<p>At this moment, confirm alternately the distance between the patient's eye and the measuring nozzle and the safety stopper screen, and adjust the position of the z-axis position icon.</p> 
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- 6** At a position where the measuring nozzle is 8-9mm from the cornea, tap the **APPLY** button and thereby set the position of the nozzle limit.

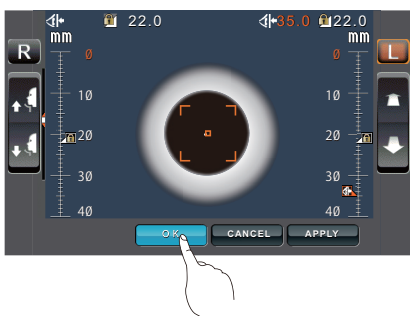


- 7** After that, move to the other eye side by tapping the **R** button/**L** button and set the safety stopper in the same way.



- 8** Tap the **OK** button on the Safety Stopper screen return to the Measurement screen and confirm that the position of the nozzle limit icon is changed.

Then push the main unit a little forward by operating the **Measuring Head Forward/Backward** button of the control panel, and then confirm that a message "Nozzle at limit position" is displayed on the screen. Setting is complete if the main unit does not go forward any more.

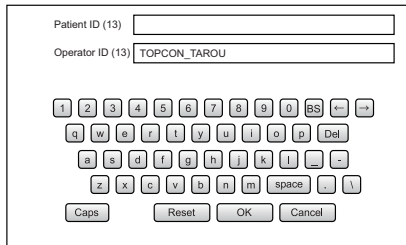


SETTING THE PATIENT ID

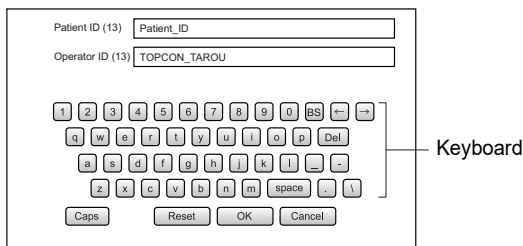
- 1 Tap the **ID** button on the control panel.



- 2 The Patient ID Input screen is called up.



- 3 Enter the patient ID using the keyboard on the screen.



- 4 Return to the Measurement screen, and confirm that the patient ID is updated.



NOTE

If the patient ID is set to "OFF" in the initial setting, the patient No./ patient ID is not displayed on the measurement screen.

AUTO MODE MEASUREMENT



CAUTION

When operating the instrument use much care so that operator's finger or hand is not pinched between the reverse side of forehead rest, a measuring head and an ocular pressure measurement window. Or the operator may be injured.



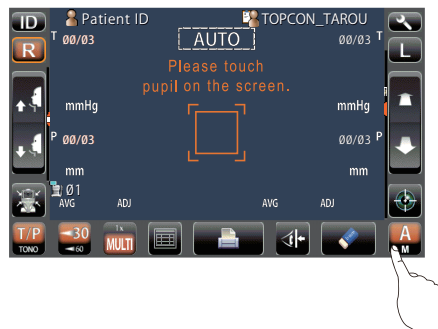
NOTE

- Auto measurement mode may not be possible, in cases where the eyelid and the eyelashes cover the pupil.
If this occurs, the operator should tell the patient to open their eyes as wide as possible, or lift the eyelid to allow for measurement.
- Auto measurement mode may not be possible due to frequent blinks or existing abnormalities in the corneal surface caused by corneal disease etc.
In this case, select manual mode.
- The ocular pressure varies due to heart beats and tears. So, if it is not possible to obtain exact measurement values by measuring only once or twice, it is recommended to perform ocular pressure measurements several times.
- When operating the instrument, be careful that the instrument does not touch the patient's nose. If touched, clean the instrument as specified in "CLEANING THE INSTRUMENT" on page 125.
- If the patient is wearing make up on the eyelid or around the eyelid using glitter, the auto alignment may not function properly.
In this case, select manual mode.
- If the machine is moved before the measurement values are displayed, it might cause an incorrect measurement.

SETTING THE AUTO MODE

Before shipment the default setting is "AUTO".

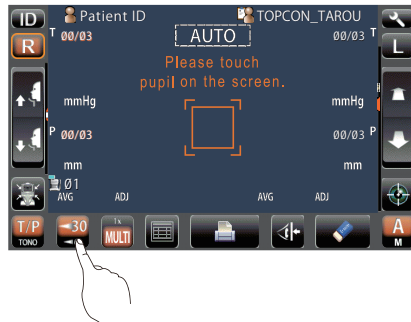
- 1** Check that the MEASUREMENT screen is on. If the **AUTO/MANUAL** button is "A," the mode is Auto mode.
- 2** If "M" (Manual mode) is displayed, tap it and change to the Auto mode.



SETTING THE MEASURING RANGE

In this instrument, the measuring range can be switched in 2 steps between "1-30" and "1-60." Normally, "1-30" is used, but if the patient's ocular pressure is high, switch it to "1-60." The default setting is "1-30" upon power on.

- 1 Check the measurement screen.
- 2 Tap the **30/60** button of the control panel and set the measuring range.



ALIGNMENT AND MEASUREMENT

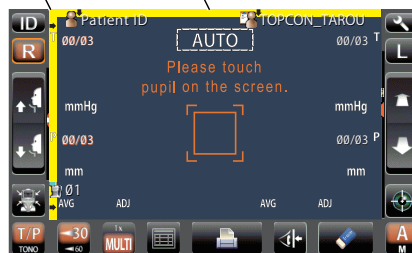
Alignment can be operated from the control panel.

- 1 When the pupil is displayed, tap the display around the pupil. The measuring head moves to display the pupil image and alignment dot on the center of the screen.



When the measuring head has reached the limit of movement (vertical/lateral directions), a yellow-colored limit mark appears, showing it is the movement limit in that direction. Tap the display, move the measuring head to a position until the pupil image comes to the center.

Limit mark





NOTE

When the measuring head is at the limit of movement in the forward direction, "Nozzle at limit position" is displayed, and when it is at the limit of movement in the backward direction, "TOO FAR" is displayed. If it is possible to detect the position, "TOO CLOSE" is displayed by the position of 3mm from the patient's eye. Using the **Measuring Head Forward/Backward** button, move the measuring head to a position until the pupil image comes to the center.

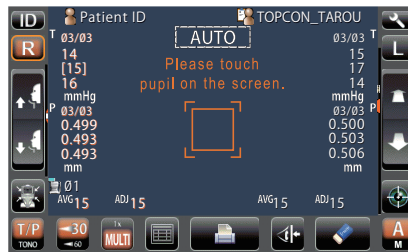


Limit of movement in the backward direction



Limit of movement in the forward direction

- 2 Alignment starts automatically. As the main body approaches the patient, focus of measurement screen changes and measurement is performed. The measurement result is displayed.



NOTE

- When the "Full Auto" of "R/L move mode" is selected in the initial setting, the instrument measuring head moves automatically to the other eye side for measuring. If the patient closes or blinks their eyes at the time of the right-and-left eye change, the change may be unable to be performed correctly. If the "Manual" of "R/L move mode" is selected, press the **(R)** button or **(L)** button of the other eye side. If the "Auto(RL)" of "R/L move mode" is selected, the measuring head moves automatically to the other eye side, however a measurement is not performed.
- Auto print (available only under Auto mode)
When the auto print setting is "ON" in the initial setting, measurement results are printed out automatically after measuring the right and left eyes. (See page 91.)
- When "Please touch pupil on the screen." is displayed, please confirm if the patient's eye fits normal conditions for measuring. Then tap the pupil on the control panel again.
- If measurement values were not obtained for the set measurement count due to measurement errors, an additional measurement is performed. For the additional measurement, see page 99.

 **NOTE**

- When the alignment status has continued for more than 30 seconds, "Please touch pupil on the screen." is displayed, then the mode is changed automatically to the Manual measurement mode.
- To stop alignment in the middle, tap the **Alignment stop** button. It is possible to stop alignment also by tapping the control panel anywhere, while an **Alignment stop** button is displayed. When "Align Stopped. Please re-touch pupil." is displayed, please tap the pupil on the control panel again.
- When TONO measurement is performed, the AUTO/MANUAL mark is changed to "TONO meas.". When PACHO measurement is performed, AUTO/MANUAL mark is changed to "PACHO meas."(only in CT-1P). When TONO measurement is performed, the mark is changed to "TONO meas.". The mark indicates the current status of measurement.



- If the alignment status has continued for more than 3 seconds in PACHO measurement, the measurement stops to change to TONO measurement. In this case, PACHO data for remaining number of times is treated as error data. (only in CT-1P)
- If the start button is tapped before all PACHO measurements are complete, PACHO data for remaining number of times is treated as error data.(only in CT-1P)

DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for both TONO and PACHO(only in CT-1P), the data of the latest three measurements are displayed on the control panel.

Figures only: Measurement was done correctly.

[] figures: When the reliability of measurement is low.(only TONO)

ERROR: Measurement was not done correctly.*

OVER: When the measurement range is exceeded.(only TONO)


* "ERROR" is displayed even if it is not within the cornea thickness measurement range (0.4mm - 0.75mm).

 **NOTE**

- In TONO average value display, low-reliability numerical data with [] are not added to the average value calculation. However, if all measurement data are numerical data with [], the average value calculation is done using these data.
- For explanation of the messages on the control panel screen, refer to "MESSAGE LIST" on page 133.
- When data is printed out, the "M" mark is printed on the value measured by using the start button in Auto mode.

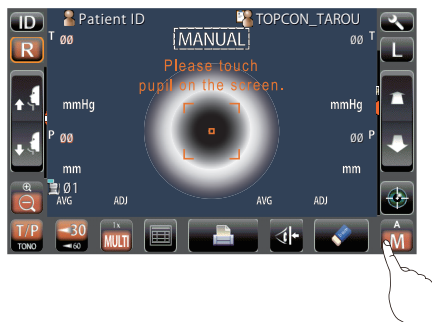
When the auto print setting is "OFF" in the initial setting, print out measurement results by tapping the **PRINT OUT** button, as necessary.

MANUAL MEASUREMENT MODE

 NOTE	<ul style="list-style-type: none">• Adjust the height of the instrument table so that the patient can sit comfortably. Otherwise, correct measurement values may not be obtained.• Do not perform measurement if the patient stops breathing or is nervous. Otherwise, correct measurement values may not be obtained.• If the machine is moved before measurement values are displayed, it may cause incorrect measurement results.
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SETTING THE MANUAL MODE

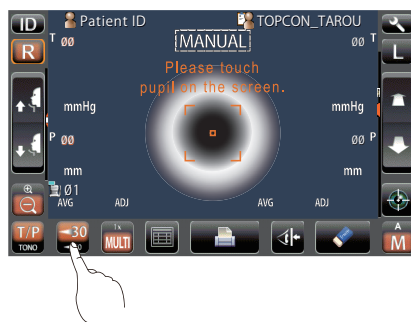
- 1** Check that the MEASUREMENT screen is on. If the **AUTO/MANUAL** button is "M," the mode is Manual mode.
- 2** If "A" (Auto mode) is displayed, tap it and change to "M".



SETTING THE MEASURING RANGE

In this instrument, the measuring range can be switched in 2 steps between "1-30" and "1-60." Normally, "1-30" is used, but if the patient's ocular pressure is high, switch it to "1-60." The default setting is "1-30" upon power on.

- 1** Check the measurement screen.
- 2** Tap the **30/60** button of the control panel and set the measuring range.



ALIGNMENT AND MEASUREMENT



Alignment is operated on the control panel.

- 1 Select the right/left eye by tapping the (R) button/(L) button.

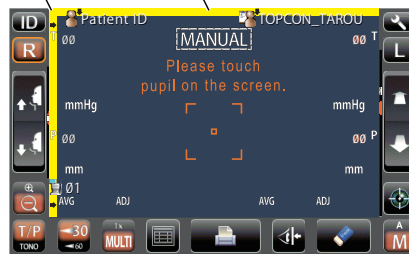


- 2 When the pupil is displayed, tap the display around the pupil. For adjusting Z direction distance, the measuring head moves to display the pupil image and alignment dot on the center of the screen.



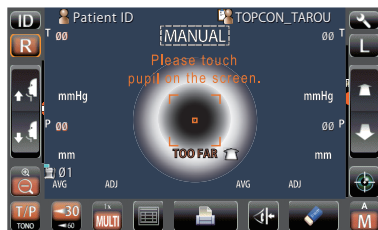
- Depending on the alignment condition, the alignment mark is displayed differently:
 -  : When alignment is insufficient/out of the measuring range
 -  : When alignment is within the measuring range in all directions (front/rear, right/left, top/bottom)
- If the pupil is not displayed on the control panel, move the measuring head by pressing the control panel, checking the eye height mark on the measurement window as a guide (see page 41).
- When the measuring head has reached the limit of movement (vertical/lateral directions), a yellow-colored limit mark appears, showing it is the movement limit in that direction. Tap the display, move the measuring head to a position until the pupil image comes to the center.

Limit mark



 **NOTE**

- When the measuring head is at the limit of movement in the forward direction, "Nozzle at limit position" is displayed, and when it is at the limit of movement in the backward direction, "TOO FAR" is displayed. If it is possible to detect the position, "TOO CLOSE" is displayed by the position of 3mm from the patient's eye. Using the **Measuring Head Forward/Backward** button, move the measuring head to a position until the pupil image comes to the center.



Limit of movement in the backward direction



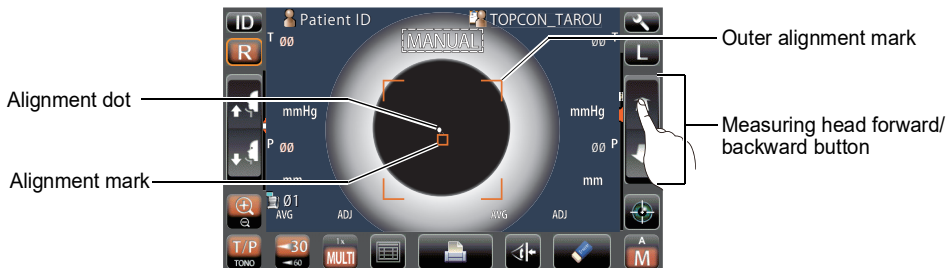
Limit of movement in the forward direction

- As the main body approaches the patient, focus of measurement screen changes.

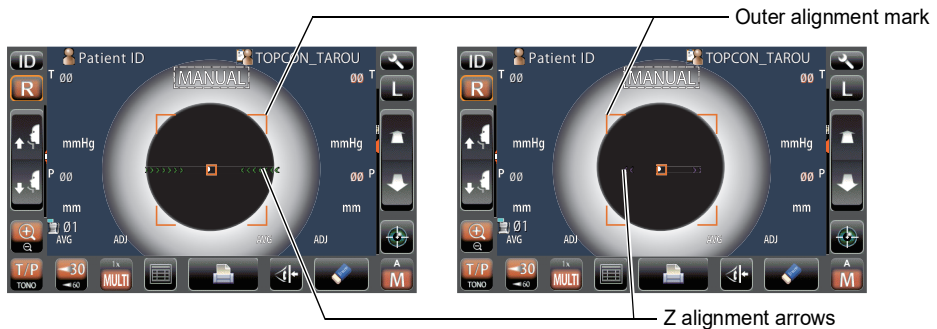
- 3 When the measuring head moves, the displayed patient eye is enlarged.



- 4 Tap the **Measuring Head Forward/Backward** button and focus on the patient's eye. The alignment dot is reflected off-focus on the cornea.

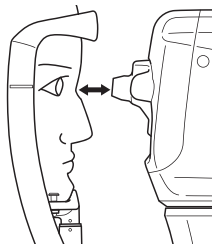


- 5 When the main body is brought closer to the patient's eye, Z alignment arrows appear on the control panel screen.

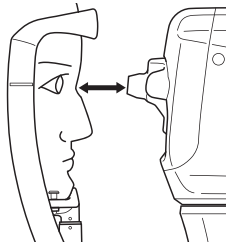


 **NOTE**

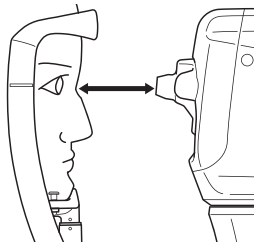
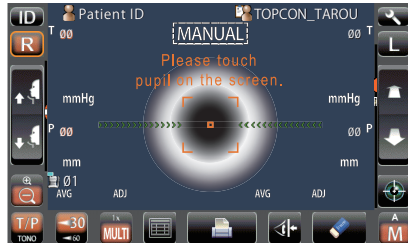
- Do not allow the eyelash and eyelid to cover the outer alignment mark to ensure stable measurement.
- If the machine is too close to the patient's eye in comparison with the optimal alignment position, outward magenta-colored Z alignment arrows blink with a message "TOO CLOSE," or if it is too far the arrows are changed to inward lime green color, and if the machine is completely off the alignment range, the message "TOO FAR" is displayed." The number of arrows are reduced accordingly as the optimal alignment reference position comes closer. If the alignment reaches the measuring range, the arrow is displayed in aqua color.



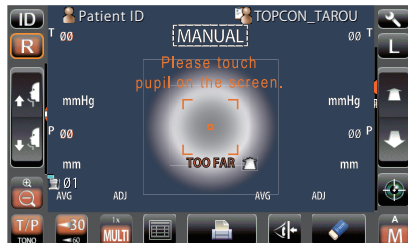
Too close



Far

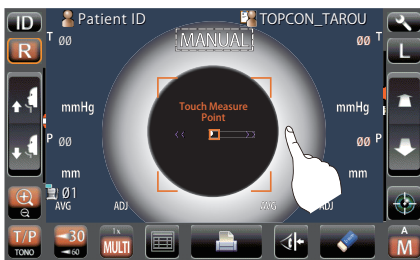


Off the alignment range

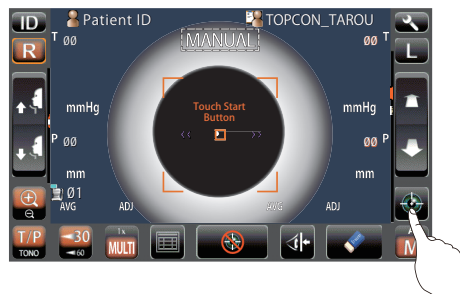


- 6 Measurement starts by tapping the **START** button. When Touch Measure is ON, and when the patient eye enlargement is displayed, measurement starts only by tapping the screen. For the Touch measurement setting, see page 97.

Touch Measure is "ON"



Touch Measure is "OFF"

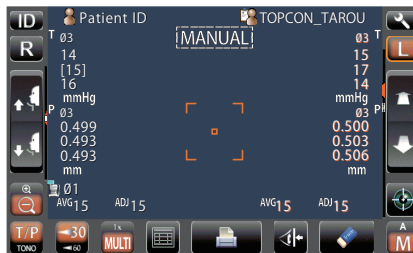




NOTE

- Even if fine alignment has not been achieved, measurement can be performed by tapping the **START** button. To ensure correct measurement, try to get fine alignment.
- Only when the outer alignment mark is displayed, measurement can be done by pressing the **START** button or by tapping the screen.
- When rotating the control panel to operate it at the upper part of the product, do not press the **START** button too hard, so as not to lose the alignment.
- To stop alignment in the middle, tap the **Alignment stop** button. It is possible to stop alignment also by tapping the control panel anywhere, while an **Alignment stop** button is displayed. When "Align Stopped. Please re-touch pupil." is displayed, please tap the pupil on the control panel again.

7 Measurement is performed and measurement values are displayed on the control panel.



DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for both TONO and PACHO(only in CT-1P), data of the latest three measurements are displayed on the control panel.

Figures only: Measurement was done correctly.

[] figures: When the reliability of measurement is low.(only TONO)

ERROR: Measurement was not done correctly.*

OVER: When the measurement range is exceeded.(only TONO)


* "ERROR" is displayed even if it is not within the cornea thickness measurement range (0.4mm - 0.75mm).



NOTE

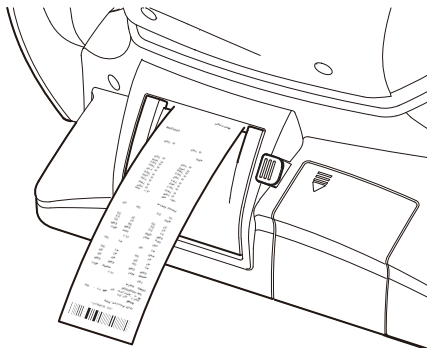
- In TONO average value display, low-reliability numerical data with [] are not added to average value calculation. However, if all measurement data are numerical data with [], average value calculation is done using these data.
- In the data printout, manual measurement values will have M marks beside them.
- For explanation of the messages on the control panel screen, refer to "MESSAGE LIST" on page 133.


PRINTOUT OF MEASUREMENT VALUES

 NOTE	<ul style="list-style-type: none">• To avoid a paper jam in the printer, do not feed the paper if it is partly cut or wrinkled.• To avoid discoloring of the printer paper (particularly the recording area) during storage, use a polypropylene bag and not one containing plasticizer (PVC, etc.).• To avoid discoloring of the printer paper (particularly the recording area) after pasting, use water-soluble glue and not one containing solvent.• Since the printer paper is thermosensitive, it is not suitable for keeping records for a long period. If necessary, prepare copies separately.
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This instrument can print out measurement values with a printer.


- 1** Check that the Measurement screen is on.
- 2** Tap the **PRINT OUT** button on the control panel.
Measurement values on the monitor are printed out.



 NOTE	<ul style="list-style-type: none">• When a red line is printed at the edge of the printer paper, replace it with a new one. For details about the replacement of the printer paper, see "PRINTER PAPER SETTING" on page 34. 58mm wide printer paper (example: TP-50KJ-R, Nippon Paper) is recommended.• "Close printer cover." indicates that the printer cover is left opened, ensure that the printer cover is completely closed.• When the auto print setting is "ON" in the initial setting, measurement is performed under Auto mode, and measurement results are printed out automatically. (See page 91.)
---	--

- 3** The following message of preparing next measurement is displayed. After printing out, the measurement values on the screen are deleted automatically, return to the Measurement screen by pressing the **OK** button.



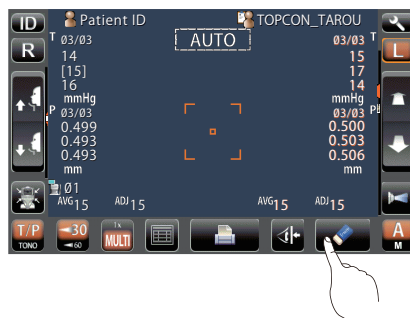
 <p>NOTE</p>	<ul style="list-style-type: none"> • As the OK button is tapped, the measuring head moves to the "stand by mode" position of the initial setting. So, do not place the patient's face on the chinrest. • When the PRINT OUT button is pushed again after all the data is cleared by printing out the measuring data, the previous measuring data is printed out. • This is not always shown after measurement. If shown follow the instruction.
--	--


END OF MEASUREMENT

Tell the patient a measuring is end and leave from the instrument.

CLEARING MEASUREMENT VALUES

- 1** Tap the **ALL CLEAR** button on the control panel. All measurement values of both eyes are cleared.

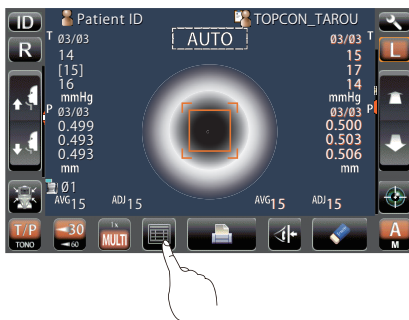


 <p>NOTE</p>	<p>After clearing the measurement values, the measuring head moves to the "stand by mode" position of the initial setting. (See page 96.)</p>
--	---

DISPLAYING ALL MEASUREMENT DATA

Normally the latest measurement is displayed, but it is possible to display and confirm all measurement data.

- 1 Tap the **ALL DATA DISPLAY** button.



- 2 The Data Display screen is displayed.

The display unit is varied according to the Settings of setup.

Setup item: TONO display unit in intraocular pressure measurement "mmHg" in TONO measurement mode

RIGHT		LEFT	
TONO	TONO	TONO	TONO
(mmHg)	(mmHg)	(mmHg)	(mmHg)
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
AVG		AVG	

Setup item: TONO display unit in intraocular pressure measurement "hPa" in TONO measurement mode


RIGHT		LEFT	
TONO	TONO	TONO	TONO
(hPa)	(mmHg)	(hPa)	(mmHg)
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
AVG		AVG	

Setup setting: Display unit in intraocular pressure measurement "mmHg," IOP adjustment "ON," T/P measurement mode(only in CT-1P)

RIGHT				LEFT			
TONO	ADJ	TONO	PRCHO	TONO	ADJ	TONO	PRCHO
(mmHg)	(mmHg)	(mmHg)	(mm)	(mmHg)	(mmHg)	(mmHg)	(mm)
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
8				8			
9				9			
10				10			
AVG				AVG			

Setup setting: Display unit in intraocular pressure measurement "hPa," intraocular pressure adjustment "ON," T/P measurement mode(only in CT-1P)

RIGHT				LEFT			
TONO	ADJ	TONO	PRCHO	TONO	ADJ	TONO	PRCHO
(hPa)	(hPa)	(mmHg)	(mm)	(hPa)	(hPa)	(mmHg)	(mm)
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
8				8			
9				9			
10				10			
AVG				AVG			

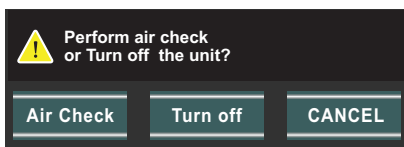
	NOTE	<p>For the value measured by manual mode and the value measured by using the start button in auto mode, the color of a character turns to yellow.</p>
---	-------------	---

3 To exit the data display and return to the Measurement screen, tap the **EXIT** button.


RIGHT				LEFT			
TONO	ADJ	TONO	PRCHO	TONO	ADJ	TONO	PRCHO
(hPa)	(hPa)	(mmHg)	(mm)	(hPa)	(hPa)	(mmHg)	(mm)
1				1			
2				2			
3				3			
4				4			
5				5			
6				6			
7				7			
8				8			
9				9			
10				10			
AVG				AVG			

OPERATION AFTER USE


- 1 Tap the **Air check/End** button on control panel.
- 2 Then, the confirming message of Air check/End operation is displayed.



- 3 Tap the **Turn off** button. Return the chinrest and measuring head to their initial positions.
- 4 The message of "Please don't turn the main switch off until the unit stops." is displayed.
- 5 The operation is complete, then the message of "The unit stops completely. Please turn the main switch." is displayed.
- 6 Turn the **POWER** switch to off.

 NOTE	When external devices are connected to external I/O terminals, turn off the power of these devices too. (if the power switch is provided)
---	---

- 7 Unplug the power cord from a 3-pin AC inlet with grounding.

 NOTE	When the instrument is not used for a long period of time, unplug the power supply cord, and detach the cable connected to the external I/O terminal.
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SOCIAL DISTANCING OPERATION (ONLY CT-1P)

This section describes social distancing operations for connecting to the main unit from a PC and measuring corneal thickness and intraocular pressure.

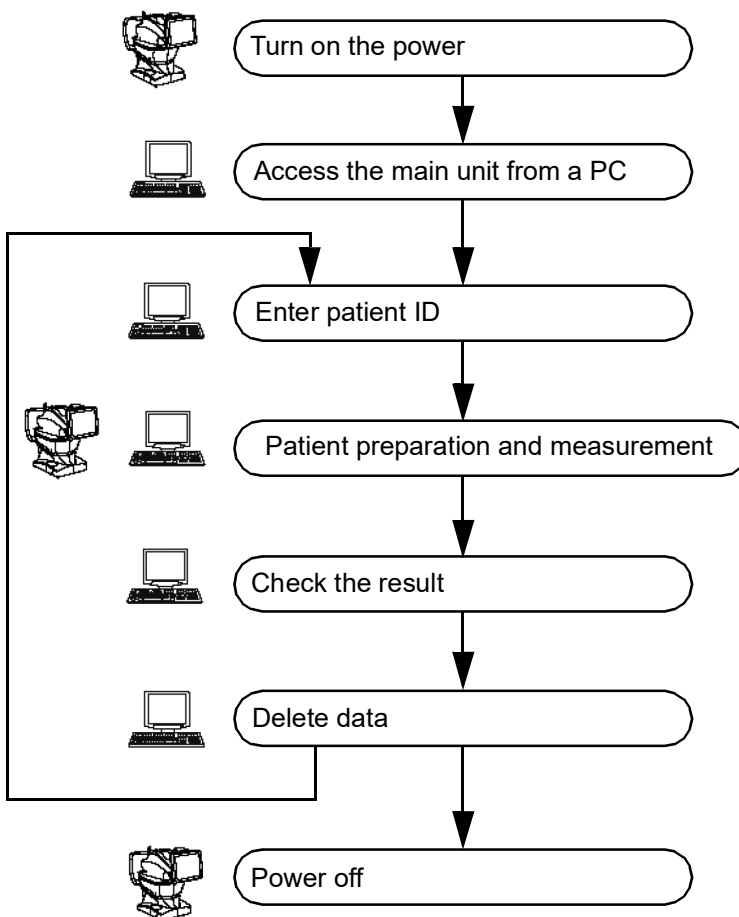
OPERATION FLOW



: Main unit operation



: PC or TABLET PC operation



NOTE

For details on how to set the CT-1P social distancing operation, please contact your dealer or the offices.

PREPARATION FOR MEASUREMENT

SET THE SOCIAL DISTANCING CONNECTION OF CT-1P

For details on how to set the CT-1P social distancing operation, please contact your dealer or the offices.

ACCESS TO THE CT-1P FROM THE PC OR TABLET PC

- 1** Turn on the WEB Browser on the PC or Tablet PC.
- 2** In the URL, enter "https:// 'IP address of the PC or Tablet PC' ".
- 3** The CT-1P Web GUI start screen will be displayed, then tap the START button to start operation.



NOTE

- Please use the web browser written by "SPECIFICATIONS OF THE PERSONAL COMPUTER (COMMERCIAL PRODUCT) TO BE CONNECTED".
If you use another web browser, social distancing operation may not run correctly.
- With the social distancing function, you can check the screen of this unit with the client software by connecting the webcam to the PC and shooting the main unit screen.
- When using a webcam, install it so that the screen of the main unit can be clearly seen, and check that the screen is displayed normally on the client software before using it.
- If it is difficult to install or obtain the webcam, or if you cannot clearly see the main unit screen displayed on the client software, operate at a position and distance where you can directly see the main unit monitor.
- This URL is used for both the server and the client. Please use the appropriate URL for the environment.

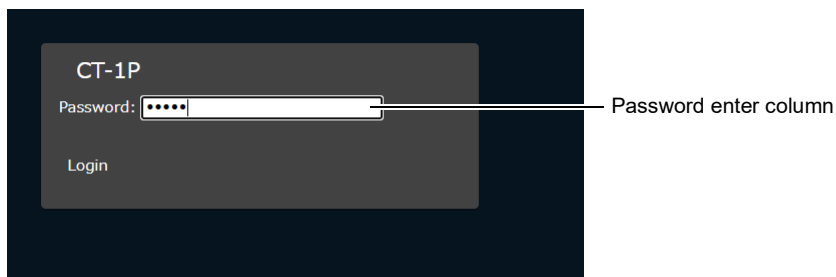
ENTER THE LOGIN PASSWORD OF THE INSTRUMENT TO AUTHENTICATE

WHEN A PASSWORD FOR SOCIAL DISTANCING CONTROL IS SET ON THE INSTRUMENT SIDE

- 1 Access CT-1P with a browser to open the screen of enter login password.



- 2 Enter the password set in CT-1P in the password enter column on the login password input screen.




- 3 If the login password is correct, the login password input screen will end and move to the patient ID input screen. If the login password is incorrect, enter the login password again.

WHEN A PASSWORD FOR SOCIAL DISTANCING CONTROL IS NOT SET ON THE INSTRUMENT SIDE

- 1 Access CT-1P with a browser to open the patient ID input screen.

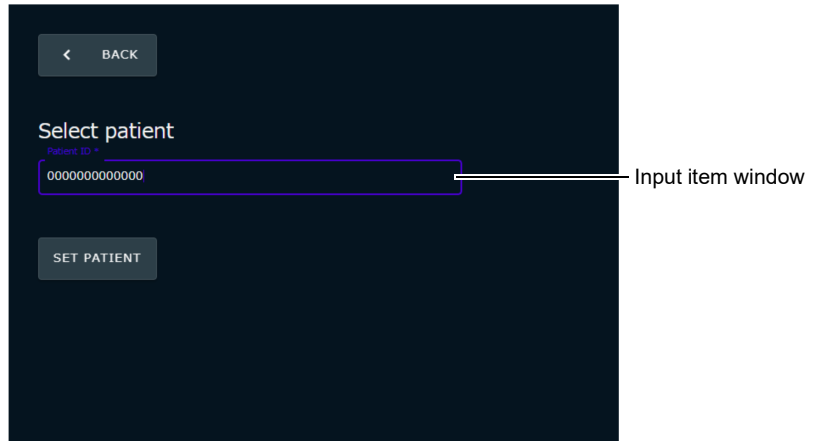
SETTING THE SAFETY STOPPER

 CAUTION	<ul style="list-style-type: none">• Before measuring, set the safety stop to prevent the measuring window glass from hitting the patient's eye. Set it respectively for the right and left eyes.• Set the safety stop from the side of the instrument. Setting operations from other positions, it is not easy to check positions of the eye and ocular pressure measuring window, may cause injury by touching ocular pressure measuring window to a patient.
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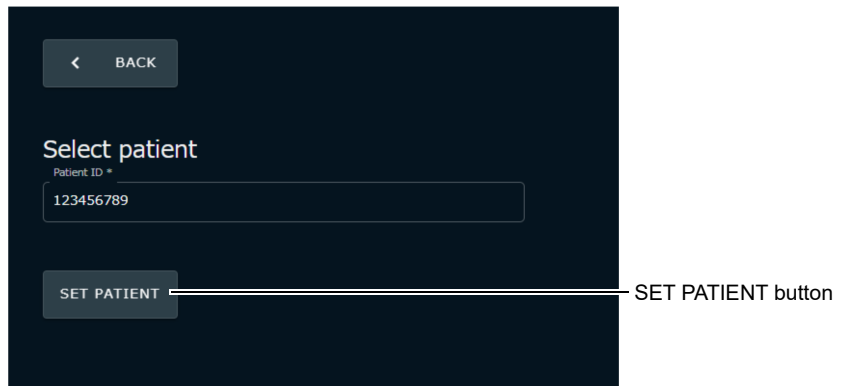
SETTING THE PATIENT

INPUTTING THE PATIENT INFORMATION

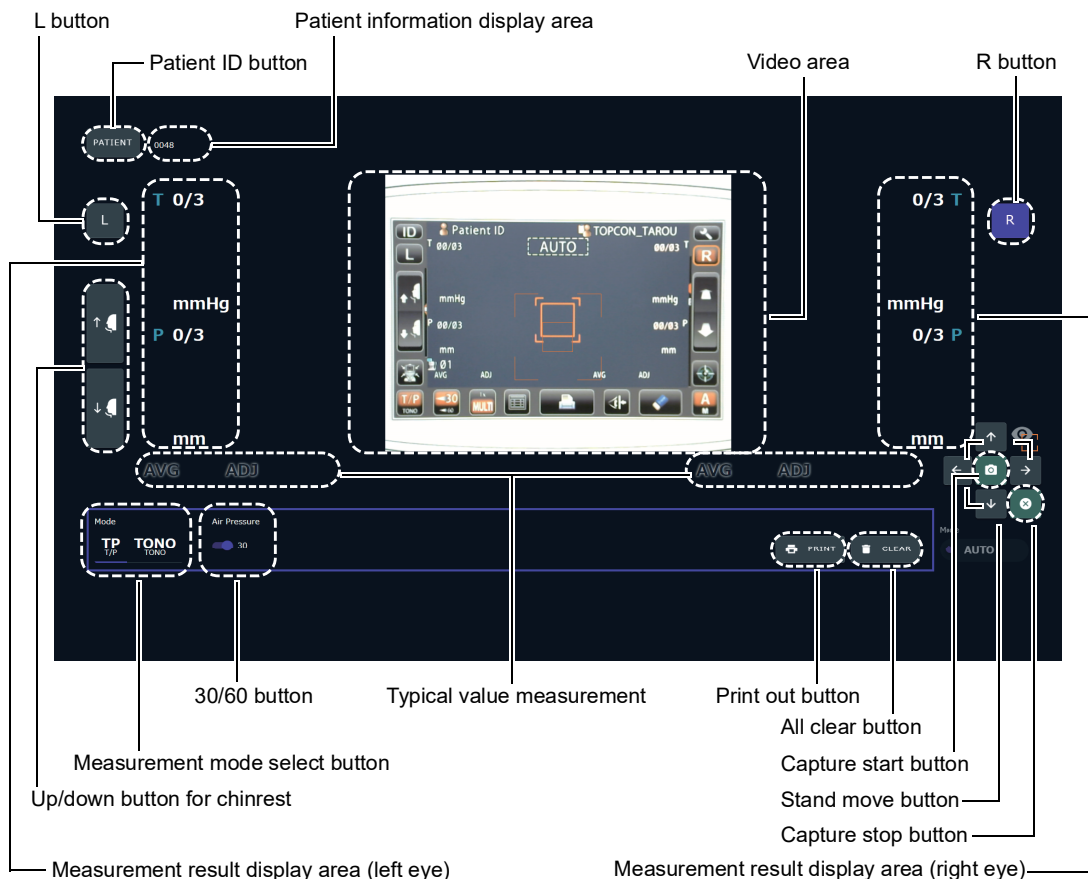
- 1 Tap the patient ID input item window to make the frame purple.



- 2 Tap the SET PATIENT button to set patient information.




MEASUREMENT




- Patient ID button Display the patient information input screen and enter the ID.
- Patient information display area Display the patient information (patient ID).
- Video area Displays the webcam image or the unit's built-in camera.
- R/L button Selects the right/left eye. By tapping the button, the main body moves to the selected direction. The selected button is framed in blue.
- Up/down button for chinrest..... Moves the chinrest up/down. Tap the top of the button to move the chinrest up, tap the bottom of the button to move the chinrest down.
- Measurement mode select button Selects a measurement mode from TONO (Ocular pressure measurement) and T/P. (Ocular pressure and Cornea thickness measurements.)
- 30/60 button..... Switches between 1-30mmHg range and 1-60mmHg range.
- Print out button Prints measurement results
- All clear button Clears all measurement data. After execution, the screen will return to the patient information input screen.

Capture start button Start alignment shooting.
 Capture stop button Stop alignment shooting.
 Stand move button..... Move the stand vertically and horizontally when viewed from the patient's side.
 Measurement result display area..... Displays the latest measured results.

PATIENT PREPARATION AND MEASUREMENT

 CAUTION	<p>To avoid injury when moving the chinrest vertically, be careful not to catch the patient's hand.</p>
--	---

 NOTE	<ul style="list-style-type: none"> • If the patient is wearing glasses or contact lenses, tell them to remove them. • Error messages and displays may differ between the web GUI and the device. • Regardless of the device settings, the units of measurement in the Web GUI are fixed as follows. Tono : mmHg, Pacho : mm
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- 1** Take off one sheet of chinrest tissue on the chinrest. If the tissue has run out, please supply new chinrest tissues. (see page 131)
- 2** Wipe the dirt form forehead rest.
- 3** Have the patient sit in front of the instrument.
- 4** Adjust the adjustable instrument table or the chair height for the patient to put his/her chin on the chinrest comfortably.
Then tell the patient to put the chin on the chinrest.
- 5** Adjust the chinrest.
Adjust the chinrest while looking at the webcam image on the measurement screen.

ALIGNMENT AND MEASUREMENT IN TONO/PACHO

- 1** Check the measurement screen.
- 2** Tap the 30/60 button and set the measuring range.
- 3** Alignment can be operated by the Stand Move button.
The measuring head moves to display the pupil image and alignment dot on the center of the screen. Then tell the patient to look at green light (internal fixation target).
- 4** When you are ready, click the Start Capture button. Alignment starts. Move the measuring head to the other eye measurement position automatically and measurement is performed. The measurement results are displayed.

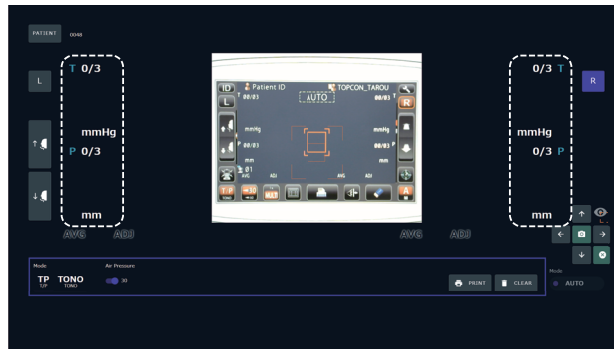
DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for TONO and PACHO, only data of the latest measurement are displayed on the browser.

Figures only: Measurement was done correctly.

[] figures: When the reliability of measurement is low. (only TONO)

ERROR: Measurement was not done correctly.



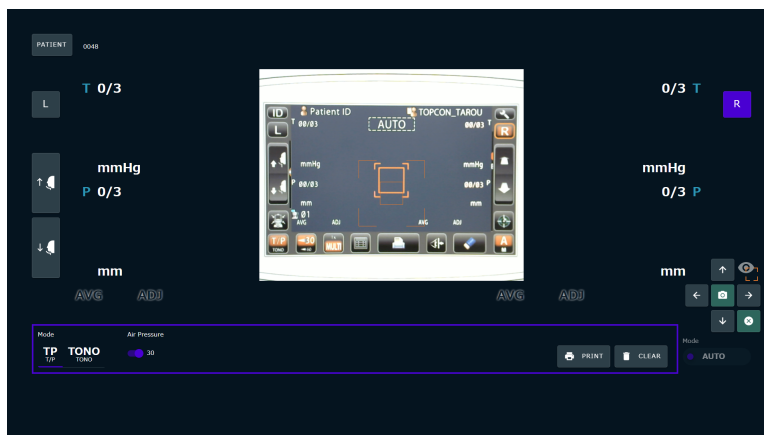
PRINT-OUT OF MEASUREMENT VALUES

- 1 Check the Measurement screen.
- 2 Tap the Printout button. Measurement values are printed out.

MEASURING ONE EYE ONLY

In Auto mode, it is possible to measure one eye only.

The R or L button displayed in blue indicates the current position.

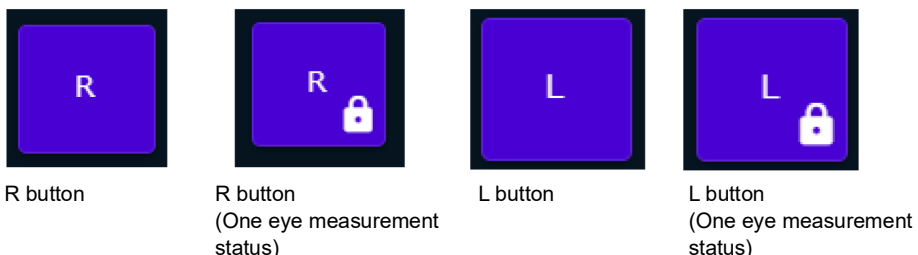


- MEASURING THE RIGHT EYE ONLY

- 1 Tap the R button to move the measuring head to the right.
- 2 When the measuring head stops, tap the R button again to display the lock icon in R on the screen.
- 3 To release the lock, tap the R button again. The lock icon disappears.

- MEASURING THE LEFT EYE ONLY

Operation is the same as measuring the right eye only.




HOW TO QUIT

- END OF MEASUREMENT

Tell the patient a measuring is end and leave from the instrument.


- CLEARING MEASUREMENT VALUES

- 1 Tap the All clear button.
All measurement values of both eyes are cleared. After clearing is completed, return to the patient information input screen.

 NOTE	<p>After clearing the measurement values, the measuring head moves to the "Stand by mode" position selected in the "Common" of "Initial". (See page 85.)</p>
---	--

- END OF THE MAIN UNIT

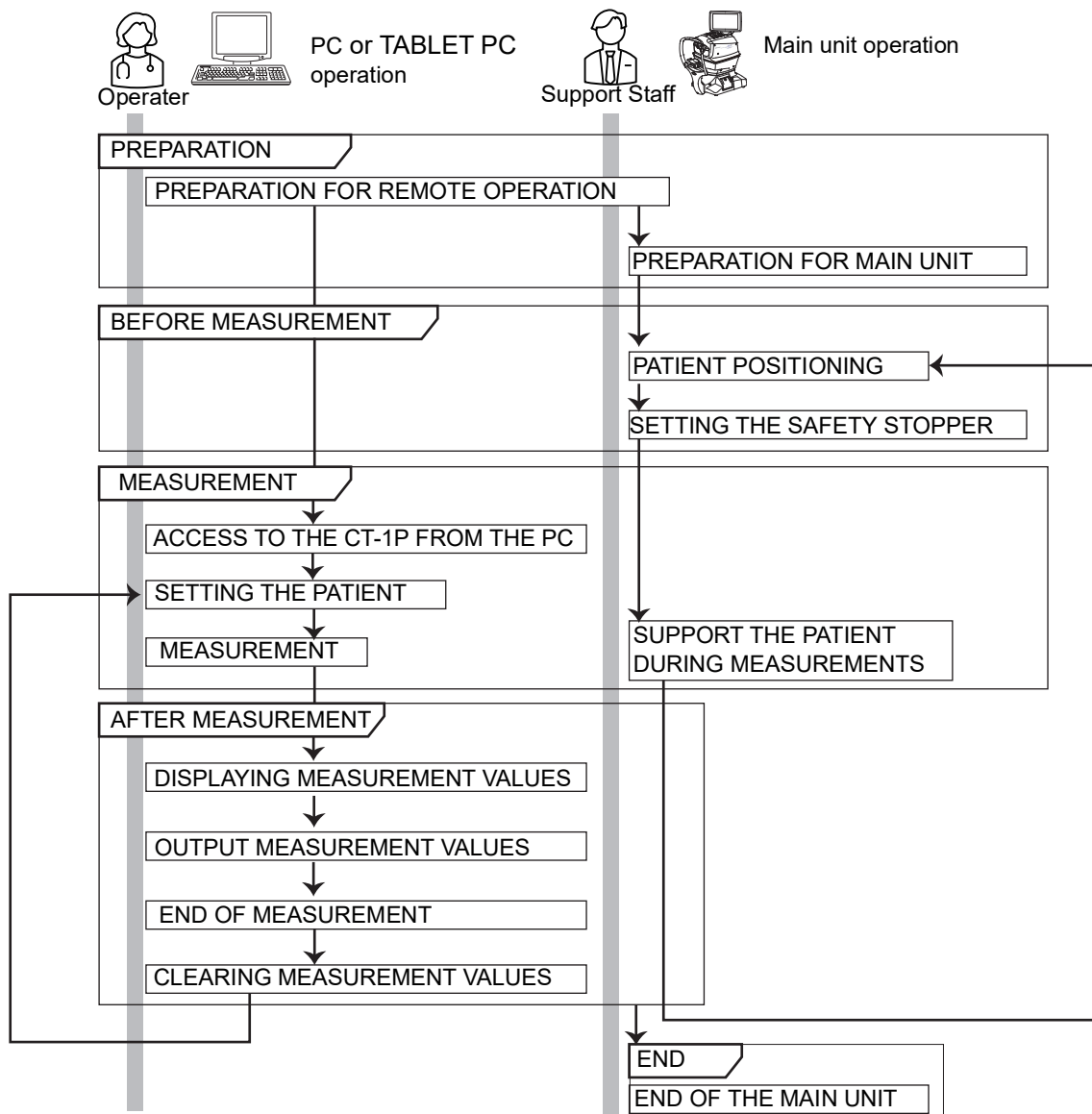
- 1 Return to the patient information input screen.
- 2 Close your web browser.
- 3 Turn off the power switch of the instrument.


 NOTE	<p>When the instrument is not used for a long period of time, unplug the power supply cord, and detach the cable connected to the external I/O terminal.</p>
---	--


REMOTE OPERATION (ONLY CT-1P)

This section describes remote operations for connecting to the main unit from a PC and measuring corneal thickness and intraocular pressure.

OPERATION FLOW




 **NOTE** For details on how to set the CT-1P remote operation, please contact your dealer or the offices.

 **CAUTION**


- For remote operation separate location from the patient and the main unit, refer to "For remote operation" on page 152.
- For remote operation, do not use in patients with symptoms such as eye pain or redness for preventing infectious disease.

PREPARATION FOR MEASUREMENT


PREPARATION FOR REMOTE OPERATION

 NOTE	Please make it possible to check audio and video between inside and outside the facility using online conferencing software, etc.
---	---

PREPARATION MAIN UNIT


 NOTE	Refer to "TURNING ON THE INSTRUMENT" to "AIR CHECK" described in the "PREPARATION BEFORE MEASUREMENT" chapter of "BASIC OPERATIONS" on page 38~40.
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PATIENT POSITIONING

 CAUTION	The operator and support staff should be careful not to let the patient accidentally hold the chin rest. The patient may fall or the main unit may fall.
--	--

 NOTE	Refer to "PATIENT POSITIONING" described in the "PREPARATION BEFORE MEASUREMENT" chapter of "BASIC OPERATIONS" on page 41.
---	--

SETTING THE SAFETY STOPPER

 CAUTION	<ul style="list-style-type: none">• Before measuring, set the safety stop to prevent the measuring window glass from hitting the patient's eye. Set it respectively for the right and left eyes.• Set the safety stop from the side of the instrument. Setting operations from other positions, it is not easy to check positions of the eye and ocular pressure measuring window, may cause injury by touching ocular pressure measuring window to a patient.
--	---

 NOTE	Refer to "SETTING THE SAFETY STOPPER" described in the "PREPARATION BEFORE MEASUREMENT" chapter of "BASIC OPERATIONS" on page 42.
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ACCESS TO THE CT-1P FROM THE PC OR TABLET PC

- 1 Turn on the WEB Browser on the PC or Tablet PC
- 2 In the URL, enter "https:// 'Server IP address' ".
- 3 The CT-1P Web GUI start screen will be displayed, then tap the START button to start operation.



NOTE

- Please use the web browser written by "SPECIFICATIONS OF THE PERSONAL COMPUTER (COMMERCIAL PRODUCT) TO BE CONNECTED".
If you use another web browser, social distancing operation may not run correctly.
- With the social distancing function, you can check the screen of this unit with the client software by connecting the webcam to the PC and shooting the main unit screen.
- When using a webcam, install it so that the screen of the main unit can be clearly seen, and check that the screen is displayed normally on the client software before using it.
- If it is difficult to install or obtain the webcam, or if you cannot clearly see the main unit screen displayed on the client software, operate at a position and distance where you can directly see the main unit monitor.
- This URL is used for both the server and the client. Please use the appropriate URL for the environment.

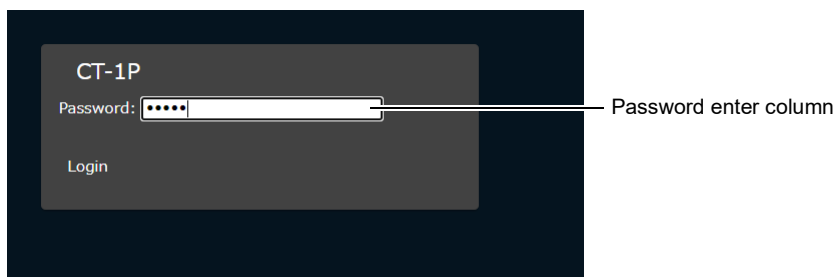
ENTER THE LOGIN PASSWORD OF THE INSTRUMENT TO AUTHENTICATE

WHEN A PASSWORD FOR REMOTE OPERATION IS SET ON THE INSTRUMENT SIDE

- 1 Access CT-1P with a browser to open the screen of enter login password.



- 2 Enter the password set in CT-1P in the password enter column on the login password input screen.



- 3 If the login password is correct, the login password input screen will end and move to the patient ID input screen. If the login password is incorrect, enter the login password again.

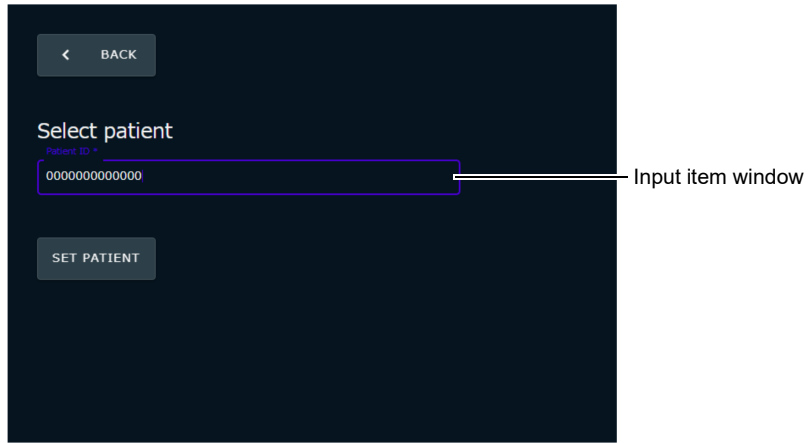
WHEN A PASSWORD FOR REMOTE OPERATION IS NOT SET ON THE INSTRUMENT SIDE

- 1 Access CT-1P with a browser to open the patient ID input screen.

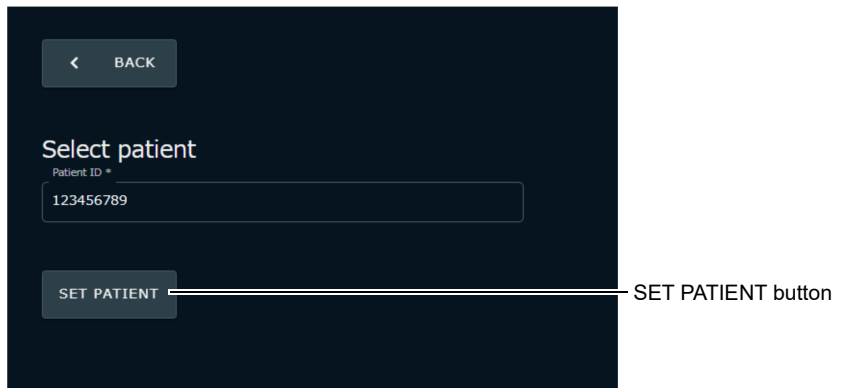
SETTING THE PATIENT

INPUTTING THE PATIENT INFORMATION

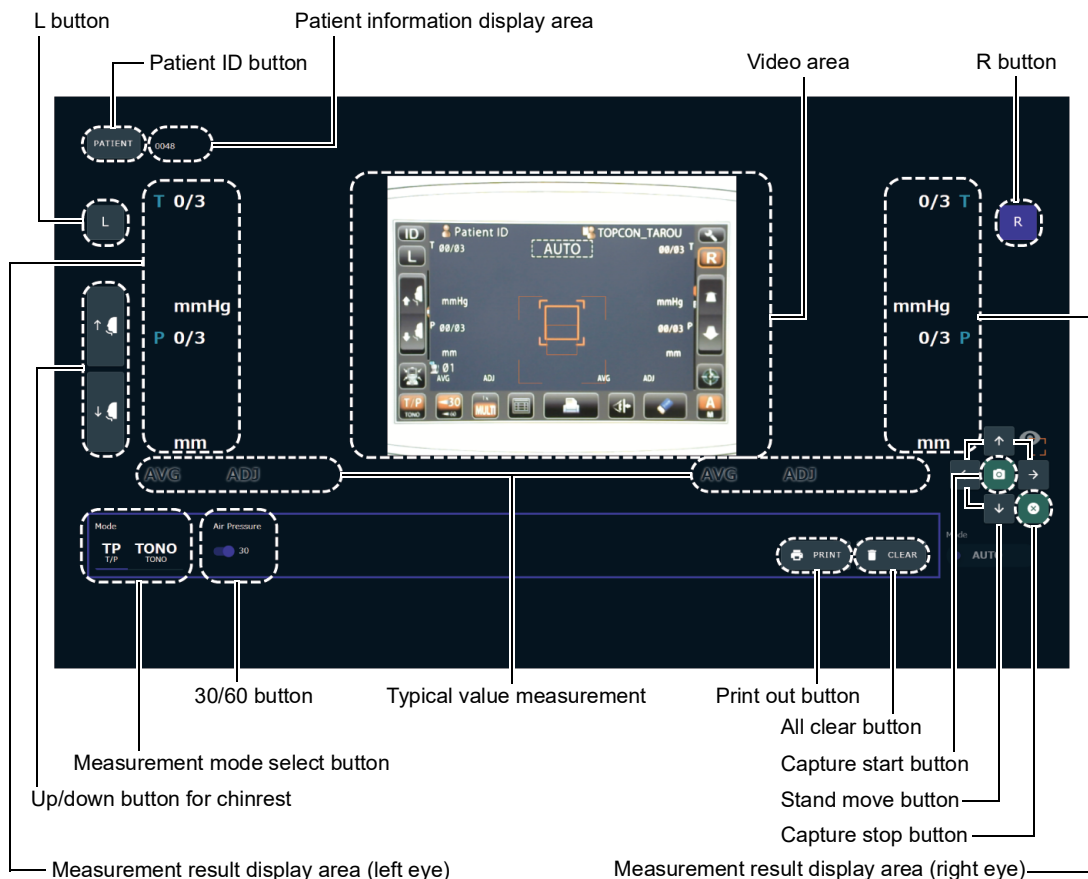
1 Tap the patient ID input item window to make the frame purple.



2 Tap the SET PATIENT button to set patient information.




MEASUREMENT




- Patient ID button Display the patient information input screen and enter the ID.
- Patient information display area Display the patient information (patient ID).
- Video area Displays the webcam image or the unit's built-in camera.
- R/L button Selects the right/left eye. By tapping the button, the main body moves to the selected direction. The selected button is framed in blue.
- Up/down button for chinrest..... Moves the chinrest up/down. Tap the top of the button to move the chinrest up, tap the bottom of the button to move the chinrest down.
- Measurement mode select button Selects a measurement mode from TONO (Ocular pressure measurement) and T/P. (Ocular pressure and Cornea thickness measurements.)
- 30/60 button..... Switches between 1-30mmHg range and 1-60mmHg range.
- Print out button Prints measurement results
- All clear button Clears all measurement data. After execution, the screen will return to the patient information input screen.


Capture start button Start alignment shooting.
 Capture stop button Stop alignment shooting.
 Stand move button..... Move the stand vertically and horizontally when viewed from the patient's side.
 Measurement result display area..... Displays the latest measured results.

ALIGNMENT AND MEASUREMENT IN TONO/PACHO

 CAUTION	To avoid injury when moving the chinrest vertically, be careful not to catch the patient's hand.
--	--

 NOTE	<ul style="list-style-type: none"> • If the patient is wearing glasses or contact lenses, tell them to remove them. • Error messages and displays may differ between the web GUI and the device. • Regardless of the device settings, the units of measurement in the Web GUI are fixed as follows. Tono : mmHg, Pachó : mm
---	--

- 1** Check the measurement screen.
- 2** Tap the 30/60 button and set the measuring range.
- 3** Alignment can be operated by the Stand Move button or Chinrest button.
The measuring head moves to display the pupil image and alignment dot on the center of the screen. Then tell the patient to look at green light (internal fixation target).
- 4** When you are ready, click the Start Capture button. Alignment starts. Move the measuring head to the other eye measurement position automatically and measurement is performed. The measurement results are displayed.

 NOTE	<ul style="list-style-type: none"> • When the "Full Auto" of "R/L move mode" is selected in the initial setting, the instrument measuring head moves automatically to the other eye side for measuring. If the patient closes or blinks their eyes at the time of the right-and-left eye change, the change may be unable to be performed correctly. If the "Manual" of "R/L move mode" is selected, press the button or button of the other eye side. If the "Auto(RL)" of "R/L move mode" is selected, the measuring head moves automatically to the other eye side, however a measurement is not performed. • Support Staff should support the patient and operator during measurements.
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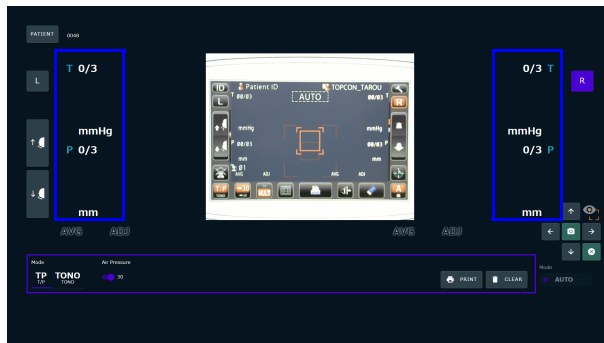
DISPLAYING MEASUREMENT VALUES

With regard to measurement values, for TONO and PACHO, only data of the latest measurement are displayed on the browser.

Figures only: Measurement was done correctly.

[] figures: When the reliability of measurement is low. (only TONO)

ERROR: Measurement was not done correctly.



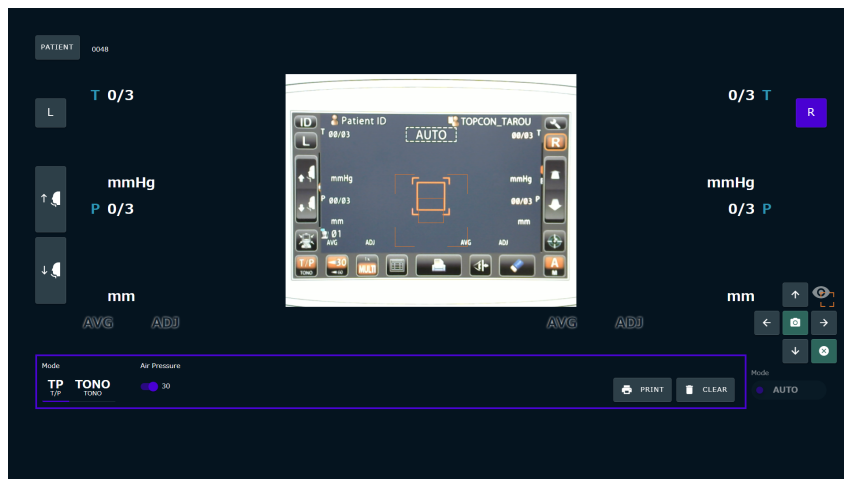
PRINT-OUT OF MEASUREMENT VALUES

- 1 Check the Measurement screen.
- 2 Tap the Printout button. Measurement values are printed out.

MEASURING ONE EYE ONLY

In Auto mode, it is possible to measure one eye only.

The R or L button displayed in blue indicates the current position.

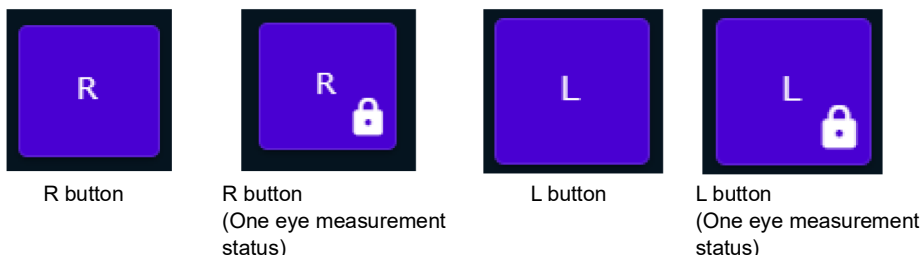


- MEASURING THE RIGHT EYE ONLY

- 1 Tap the R button to move the measuring head to the right.
- 2 When the measuring head stops, tap the R button again to display the lock icon in R on the screen.
- 3 To release the lock, tap the R button again. The lock icon disappears.

- MEASURING THE LEFT EYE ONLY

Operation is the same as measuring the right eye only.




HOW TO QUIT

- END OF MEASUREMENT

Tell the patient a measuring is end and leave from the instrument.


- CLEARING MEASUREMENT VALUES

- 1 Tap the All clear button.
All measurement values of both eyes are cleared. After clearing is completed, return to the patient information input screen.

 NOTE	<p>After clearing the measurement values, the measuring head moves to the "Stand by mode" position selected in the "Common" of "Initial". (See page 85.)</p>
---	--

- END OF THE MAIN UNIT

- 1 Return to the patient information input screen.
- 2 Close your web browser.
- 3 Turn off the power switch of the instrument.

 NOTE	<p>When the instrument is not used for a long period of time, unplug the power supply cord, and detach the cable connected to the external I/O terminal.</p>
---	--


OPTIONAL OPERATIONS

DISPLAYING THE PATIENT ID (PATIENT No.) OR OPERATOR ID

A patient ID or operator ID of up to 13 characters can be inputted and displayed on the control panel and printout.

However, if no patient ID is inputted, the patient No. is allocated automatically by the device.

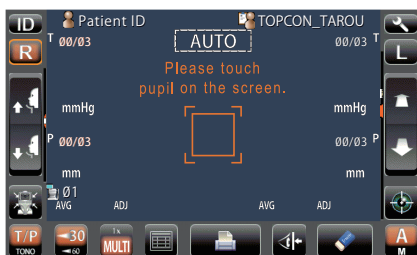
- 1 Tap the **ID** button.
- 2 Tap the keyboard on the screen and enter characters. Tap the **OK** button to set the input value.

 NOTE	The Patient ID is reset when measurement values are printed or if the ALL CLEAR button is tapped. The Patient No. reset condition can be selected so that the patient No. is reset upon power on, in the initial setting of the setup screen. "Refer to "RESETTING THE PATIENT NO." on page 94.
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MEASURING ONE EYE ONLY



In Auto mode, it is possible to measure one eye only.


The current measurement position is distinguished by the color of the **(R)/(L)** button; orange indicates an active measurement position.



MEASURING THE RIGHT EYE ONLY



- 1 Tap the **(R)** button to move the measuring head to the right.
- 2 When the measuring head stops, moving tap the **(R)** button once again: the  lock icon is displayed .

 NOTE	When the  lock icon is displayed, the measuring head does not move to the other eye even when the measurement of one eye is finished.
---	--

- 3 To release the lock, tap the **(R)** icon: The  lock icon disappears.

MEASURING THE LEFT EYE ONLY

Operation is the same as measuring the right eye.

 NOTE	In order to measure the other eye when the  lock icon is displayed, tap the other side (R) button or (L) button.
---	--

OUTPUT USING RS-232C

This instrument can output data to a PC, etc. via the RS-232C interface.

- 1** Connect the interface cable to RS-232C OUT.
Refer to "CONNECTING EXTERNAL I/O TERMINALS" on page 33.
- 2** Set up of data communication settings.
For details, refer to "DATA COMMUNICATION (COMM)" on page 88.
- 3** Perform measurements.
- 4** Tap the (PRINT OUT) button on the control panel.
When output is completed, "RS-232C SUCCESS" is displayed on the screen.

INPUT USING USB


This instrument can input ID numbers from a bar code reader, etc. via the USB.

- 1** Check the connection of USB IN.
For connection, refer to "CONNECTING EXTERNAL I/O TERMINALS" on page 33.
- 2** Input ID numbers from the external device.
The inputted ID numbers are displayed on the screen.

OUTPUT USING LAN

This instrument can output data to a PC, etc. via the LAN interface.

- 1** Connect the network cable to LAN OUT.
For connection, refer to "CONNECTING EXTERNAL I/O TERMINALS" on page 33.
- 2** Set up of LAN connection settings.
For details, refer to "LAN CONNECTION (LAN)" on page 88.
- 3** Perform measurements.
- 4** Tap the (PRINT OUT) button on the control panel.

 NOTE	For an explanation of messages during communication, refer to the "MESSAGE LIST" on page 133.
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SETTING FUNCTIONS ON THE SETUP SCREEN

OPERATING THE SETUP SCREEN

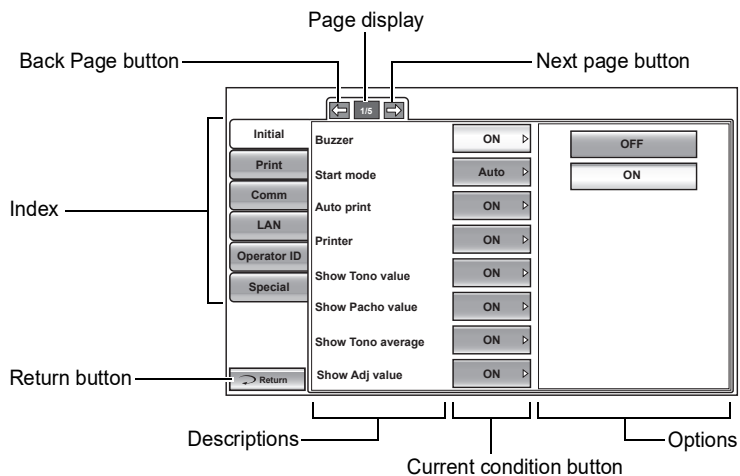
Various functions can be set on the SETUP screen.

PREPARATIONS FOR SETTING

- 1** Make sure that the power cord is connected.
For connection, refer to "CONNECTING POWER CORD" on page 32.
- 2** Turn ON the (POWER) switch.
- 3** Tap the (SETTINGS) button on the control panel.

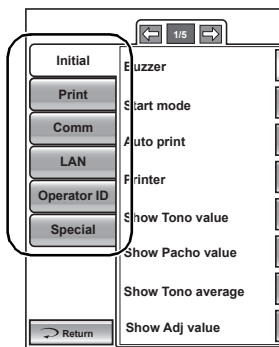


The SETUP screen is displayed.

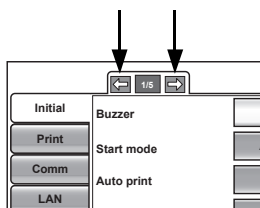


OUTLINE OF SETUP SCREEN OPERATIONS

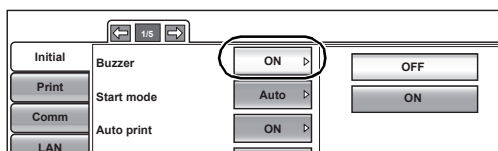
1 Tap **INDEX** and select the category to set.



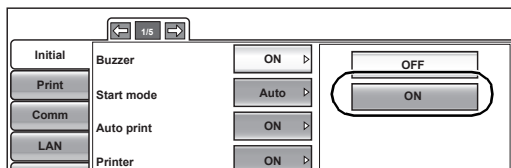
2 Operate the **NEXT PAGE** button or **BACK PAGE** button, as necessary, and display the page to confirm/change.



3 Tap the **Current Condition** button of the item to be changed and find the **Options** button.





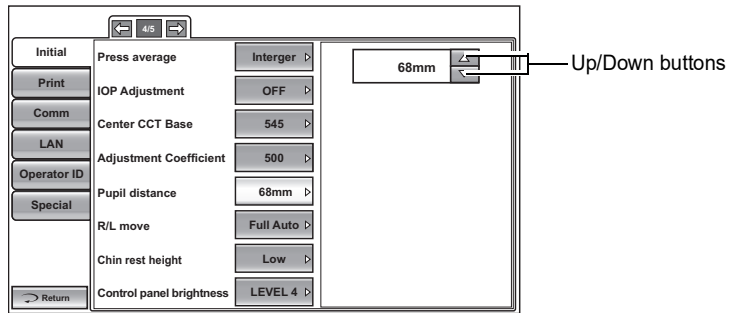
4 Tap the **Options** button and change the setting.




- Instead of the **Options** button, the **UP/DOWN** buttons and ten-key would be displayed.

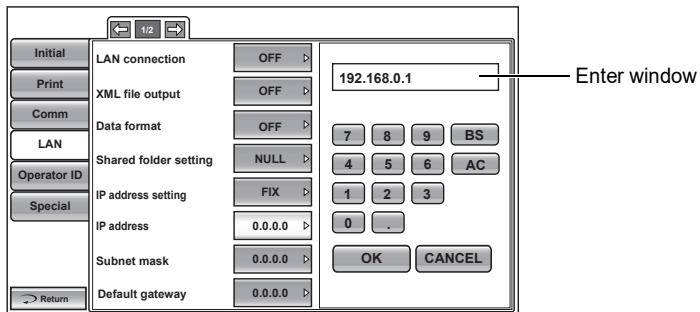
UP/DOWN BUTTON:

Tap the  up or  down button on the screen to change the setting.




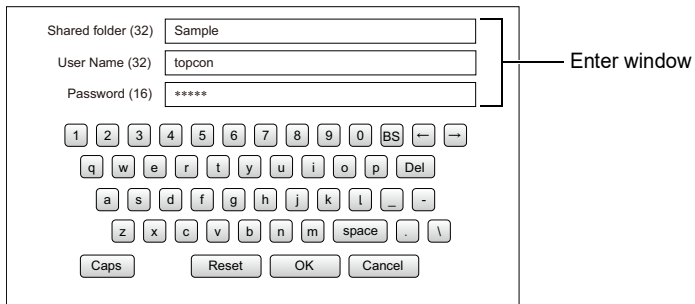
TEN-KEY:

Tap ten-key on the screen and enter the figure. If there are several windows to enter, tap the window to enter the figure by ten-key. Tap  button to set the input value.




KEYBOARD:

Tap the keyboard on the screen and enter characters. If there are several windows to enter, tap the window to enter the figure by keyboard. Tap  button to set the input value.

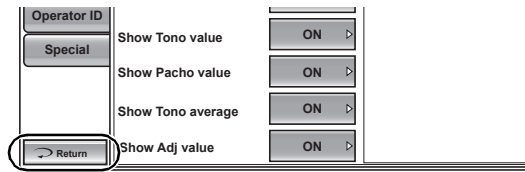


NOTE

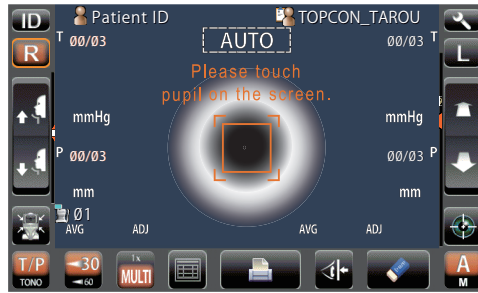
The set value is updated when an  button is tapped.

RETURNING TO THE MEASUREMENT SCREEN

1 Tap the **Return** button.



2 The Measurement screen is displayed.



LIST OF SETUP ITEMS

Setup items are categorized into 6 large indexes.

- "Initial" items related to the initial status after power on
- "Print" items related to output from the internal printer
- "Comm" items related to data output with the external device
- "LAN" items related to output using the LAN
- "Operator ID" items related to Operator ID.
- "Special" items related to maintenance (for service engineer only)

INITIAL (INITIAL SETTING)

Initial contains settings related to the initial status after power on, clearing all measurement values, etc.

Descriptions	Options	Details	Initial value	Page
Buzzer	OFF	Buzzer does not sound.	ON	90
	ON	Buzzer sounds.		
Start mode	MANUAL	Default measurement mode is MANUAL.	Auto	91
	AUTO	Default measurement mode is AUTO.		
Auto print	ON	After AUTO measurement, results are printed out automatically.	ON	91
	OFF	Not printed automatically.		
Printer	OFF	Internal printer is disabled.	ON	91
	ON	Internal printer is active.		
Show Tono value	OFF	Tono value is not displayed.	ON	92
	ON	Tono value is displayed.		
Show Pacho value *1	OFF	Pacho value is not displayed.	ON	92
	ON	Pacho value is displayed.		
Show Tono average	OFF	Tono average value is not displayed.	ON	93
	ON	Tono average value is displayed.		
Show Adj value *1	OFF	Adjusted value is not displayed.	ON	93
	ON	Adjusted value is displayed.		
Patient No. reset	OFF	Patient No. is not reset upon power on.	OFF	94
	ON	Patient No. is reset upon power on.		
Show patient ID	OFF	Patient ID is not displayed.	ON	94
	ON	Patient ID is displayed.		
Required patient ID	OFF	Patient ID is not displayed.	OFF	95
	ON	Patient ID is displayed.		
Device ID number	1-99 Set by ten-key display	Sets the Device ID number.	1	95
Show Device ID number	OFF	Patient ID is not displayed.	OFF	96
	ON	Patient ID is displayed.		
Stand by mode	RIGHT	Waiting at the initial position for right eye measurement.	RIGHT	96
	LEFT	Waiting at the initial position for left eye measurement.		
	LAST	Waiting at the last position of the measured eye.		
Auto power save	OFF	Power save function is not used.	10min	97
	1min	Power save status in 1min after last operation.		
	5min	Power save status in 5min after last operation.		
	10min	Power save status in 10min after last operation.		
	20min	Power save status in 20min after last operation.		
	30min	Power save status in 30min after last operation.		
60min	Power save status in 60min after last operation.			

Descriptions	Options	Details	Initial value	Page
Touch Measure	OFF	Touch measurement is not performed in manual measurement with an enlarged patient eye.	OFF	97
	ON	Touch measurement is performed in manual measurement with an enlarged patient eye.		
Cont. cycle (TONO)	2-10 Set by ten-key display	The number of continuous measurements (TONO)	3	98
Cont. cycle (PACHO) * ₁	2-10 Set by ten-key display	The number of continuous measurements (PACHO)	3	98
Add Measure	0-99 Set by ten-key display	The number of additional measurements	1	99
Low Credibility Measure	No Including	The value of low reliability is excluded form count cycle.	Including	99
	Including	The value of low reliability is included to count cycle.		
Date/Time	Set by ten-key display	Sets year, month, day, time (24hrs), minute and second	Installation date/time	100
Init. measure mode * ₁	TONO	Default measurement mode on is TONO.	T/P	100
	T/P	Default measurement mode is T/P.		
Tono display Unit	mmHg	Display in mmHg	mmHg	101
	digit	Display in digit		
	hPa	Display in hPa		
	Torr	Display in Torr		
Pacho display Unit * ₁	mm	Display in mm	mm	101
	μm	Display in μm		
Press average Mode	Integer	Display in Integer	Integer	102
	Real	Display in Real		
IOPAdjustment * ₁	OFF	IOP adjustment type is OFF.	OFF	102
	ON	IOP adjustment type is ON.		
Center CCT Base * ₁	0-999 Set by ten-key display	Sets the central cornea thickness base value. (Used when IOP adjustment is "ON.") A : Center CCT Base	545	103
Adjustment Coefficient * ₁	0-999 Set by ten-key display	Sets the adjustment coefficient. (Used when IOP adjustment is "ON.") B : Adjustment Coefficient	500	103
Pupil distance	58mm 60mm 62mm 64mm 66mm 68mm 70mm 72mm 74mm Set by up/down button	Sets the pupil distance between right and left eyes.	68mm * ₂	104
R/L move	Manual	Measurement head moves right and left manually.	Full Auto	104
	Full Auto	Measurement head moves right and left automatically.		
	Auto(RL)	The switching of right and left eyes is performed at "Auto(RL)".		
Chin rest height	HIGH	Default chinrest height.	Low	105
	CENTER			
	LOW			
Control panel brightness	LEVEL 1 (dark)	The brightness of the control panel.	LEVEL 4	105
	LEVEL 2			
	LEVEL 3			
	LEVEL 4 (bright)			
R/L notation	R/L	Right/left eyes is displayed by R/L.	R/L	106
	OD/OS	Right/left eyes is displayed by OD/OS.		
Packing mode	Execute	Starts packing mode.	Execute	106

Descriptions	Options	Details	Initial value	Page
Shaded characters	ON	Font style of measurement values is shaded.	ON	106
	OFF	Font style of measurement values is not shaded.		
XZ MOTOR direction	Adjust	The moving direction is changed according to control panel position.	Adjust	107
	Fixed	The moving direction is not changed according to control panel position.		
Meas. data recording way	Data on credibility	Measurement data is displayed in the order from low to high reliability.	Data with error	107
	Data without error	The measurement data without error is displayed.		
	Data with error	All the measurement data (including data with error) is displayed.		
Meas.count change mode	1x	Meas.count change mode is set to "1x" upon power on.	Multi	108
	Multi	Meas.count change mode is set to "Multi" upon power on.		
IOL LED Brightness * ₃	20% to 100% Set by up/down button	Sets LED brightness in IOL mode by tapping the IOL button.	40%	108

*1:Only in CT-1P

*2:Depending on the destination, preset values differ.

*3:Only in CT-1

SETTING OF INTERNAL PRINTER (PRINT)

Print contains settings related to output from the internal printer.

Description	Options	Details	Initial value	Page
Barcode	ON	Barcode is printed.	OFF	109
	OFF	Barcode is not printed.		
Operator ID	ON	Operator ID is printed.	OFF	110
	OFF	Operator ID is not printed.		
Name	ON	"Name" space is available.	ON	110
	OFF	"Name" space is not available.		
Date	ON	Date is printed.	ON	110
	OFF	Date is not printed.		
Date style	YMD	Print in Year/Month/Day format.	DMY	111
	MDY	Print in Month/Day/Year format.		
	DMY	Print in Day/Month/Year format.		
Patient No./ Patient ID	ON	Patient No./Patient ID is not printed.	ON	111
	OFF	Patient No./Patient ID is printed.		
Device ID number	ON	Device ID number is printed.	OFF	111
	OFF	Device ID number is not printed.		
Serial number	ON	Serial No. is printed.	ON	112
	OFF	Serial No. is not printed.		
TOPCON logo	ON	TOPCON logo is printed.	ON	112
	OFF	TOPCON logo is not printed.		
Message	ON	Message is not printed.	OFF	112
	OFF	Message is not printed.		
Message data	Set by keyboard display	String of up to 72 characters.	NULL	113
Printer order	R/L	TONO measurement value and PACHO measurement value are separately printed.	SIMPLE	113
	DATA	The order is right eye and left eye regardless of the TONO measurement value and PACHO measurement value.		
	SIMPLE	Print in the SIMPLE format.		
Measure correction * ₁	OFF	Corrected measurement value is not printed.	ON	114
	ON	Corrected measurement value is printed.		

Description	Options	Details	Initial value	Page
mmHg Display on hPa	OFF	mmHg is not printed on hPa.	ON	114
	ON	mmHg is printed on hPa.		
IOP ADJ*1	OFF	Center CCT Base and Adjustment Coefficient for IOP ADJ formula are not printed.	ON	115
	ON	Center CCT Base and Adjustment Coefficient for IOP ADJ formula are printed.		
Auto Cut	OFF	Auto cut is not carried out.	ON	115
	ON	Auto cut is carried out.		

*1:Only in CT-1P

DATA COMMUNICATION (COMM)

Comm contains settings related to data output with the external device.

Description	Options	Details	Initial value	Page
Output data*1	TONO	Only TONO data are outputted.	TONO	116
	T/P	TONO/Pacho data are outputted.		
Format	MODE1	Average value output format	MODE1	116
	MODE2	Latest value output format		
	STD1	TOPCON STD1 format		
	STD2	TOPCON STD2 format		
	STD5	TOPCON STD5 format		
Output port	OFF	Output port is disabled.	OFF	117
	ON	Output port is enabled.		
Baudrate	2400bps	Baudrate value: 2400bps	9600bps	117
	9600bps	Baudrate value: 9600bps		

*1:Only in CT-1P

LAN CONNECTION (LAN)

LAN contains settings related to data output via LAN.

Description	Options	Details	Initial value	Page
LAN connection	ON	LAN connection is on.	OFF	118
	OFF	LAN connection is off.		
XML file output	ON	XML file is outputted.	ON	118
	OFF	XML file is not outputted.		
Data format	OFF	Data file is not output.	OFF	119
	STD5	TOPCON STD5 format.		
Shared folder setting	Shared folder (up to 32 characters) User name (up to 32 characters) Password (up to 16 characters) Set by keyboard display	Path and permission to the shared folder is set.	NULL	119
IP address setting	FIX	Assign IP address manually.	FIX	119
	AUTO	Assign IP address automatically.		
IP address	0. 0. 0. 0 Set by ten-key display	IP address of CT-1P/CT-1.	0.0.0.0	120
Subnet mask	0. 0. 0. 0 Set by ten-key display	Subnet mask address of CT-1P/CT-1.	0.0.0.0	120
Default gateway	0. 0. 0. 0 Set by ten-key display	Default gateway address of CT-1P/CT-1.	0.0.0.0	120
Primary DNS server	0. 0. 0. 0 Set by ten-key display	Primary DNS Server number.	0.0.0.0	121
Secondary DNS server	0. 0. 0. 0 Set by ten-key display	Secondary DNS Server number.	0.0.0.0	121

OPERATOR ID

OPERATOR contains settings related to Operator ID.

Description	Options	Details	Initial value	Page
Use Operator ID	ON	Operator ID will be displayed on the control panel and printer output.	OFF	122
	OFF	Operator ID will not be displayed on the control panel and printer output.		
Prefix of Ope. ID	Set by ten-key display (up to 3 characters)	The Prefix of Operator ID can be registered.	NULL	122
Operator ID request	OFF	Operator ID is not required.	OFF	123
	ON	Operator ID is required.		
Fixed Operator ID	OFF	Operator ID is not fixed.	OFF	123
	ON	Operator ID is fixed.		
Input Fixed Ope. ID	Set by ten-key display (up to 13 characters)	Input fixed operator ID.	NULL	123

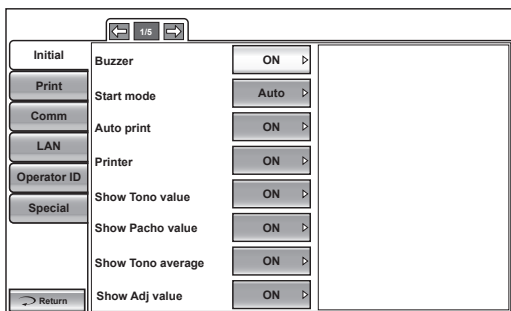
SPECIAL

SPECIAL is a mode for service engineers only; it can not be accessed.

INITIAL SETTING (INITIAL)

INITIAL contains settings related to the initial status upon power on. Measurement functions including measurement mode, auto mode and the number of continuous measurements, as well as the display of the measurement results, the date and language can be set.

- 1 Tap the category "Initial" of the "SETUP screen." The programmable items for the initial setting are displayed.



NOTE

To exit from this screen

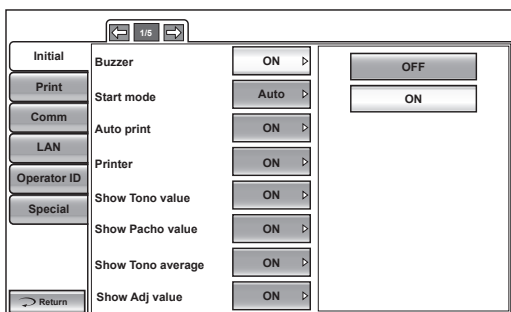
- Tap the **Return** button.
- The "SETUP screen" is exited and the "MEASUREMENT screen" returns.

- 2 Tap the **NEXT PAGE** button, as needed, until the set item to be checked/changed is displayed.

SETTING THE BUZZER SOUND

It is possible to set whether or not to set the buzzer sound. Before shipment, the default setting is "ON" (Buzzer sounds).

- 1 Tap the **Current Condition** button of the set item display "Buzzer" in the "Initial" menu.

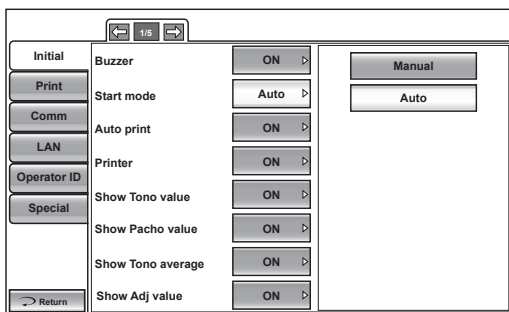


- 2 Tap the **Options** button and select "ON" (Buzzer sounds) or "OFF" (Buzzer does not sound).
- 3 The setting is completed and the changed setting is displayed on the **Current Condition** button.

SETTING THE START MODE

The start mode can be changed upon power on. Before shipment, the default setting is "Auto."

- 1 Tap the **Current Condition** button of the set item display "Start mode" in the "Initial" menu.

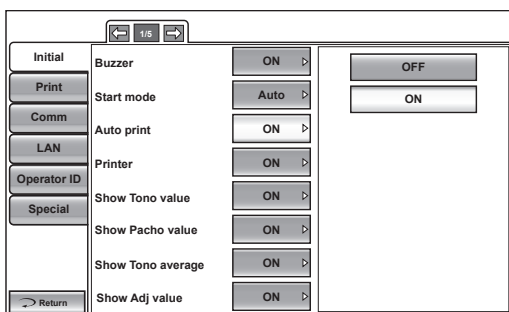


- 2 Tap the **Options** button and select "Manual" or "Auto".
- 3 The setting is complete.

SETTING AUTO PRINT

After measuring the right and left eyes under auto mode, the results can be printed automatically by the printer. Before shipment, the default setting is "ON" (Auto Print is performed).

- 1 Tap the **Current Condition** button of the set item display "Auto Print" in the "Initial" menu.



- 2 Tap the **Options** button and select "ON" (Auto Print is performed) or "OFF" (Auto Print is not performed).
- 3 The setting is complete.



NOTE

If the eye to be measured is set to the right/left eye only, the auto print function will be performed after the selected eye is measured. For the setting of the eye to be measured, see "MEASURING ONE EYE ONLY" on page 79.

SETTING THE PRINTER

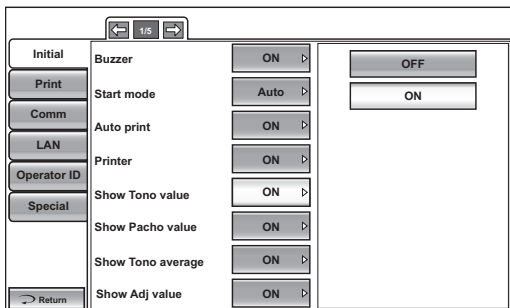
The internal thermal printer can be set. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Printer" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON (Printing is performed.)" or "OFF (Printing is not performed.)"
- 3 The setting is complete.

DISPLAYING THE TONO VALUE

It is possible to set whether or not to display the Tono value. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Show Tono value" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

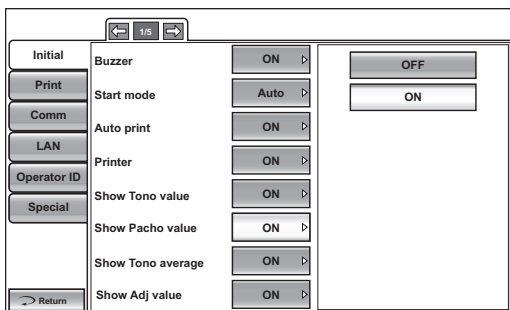


- 3 The setting is complete.


DISPLAYING THE PACHO VALUE

It is possible to set whether or not to display the Pacho value. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Show Pacho value" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."



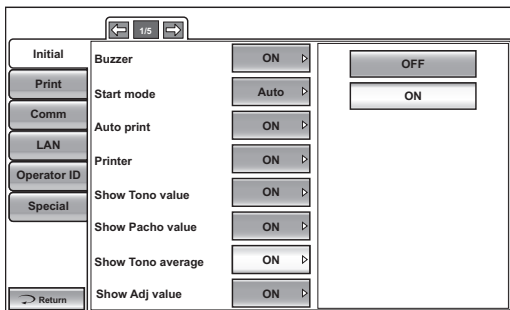
- 3 The setting is complete.

 NOTE	Only in CT-1P.
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DISPLAYING THE TONO AVERAGE VALUE

It is possible to set whether or not to display the Tono average value. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Show Tono average" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

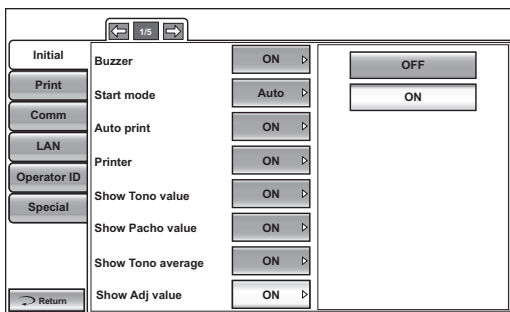


- 3 The setting is complete.


DISPLAYING THE ADJUSTED VALUE

It is possible to set whether or not to display the Adjusted value. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Show Adj value" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."



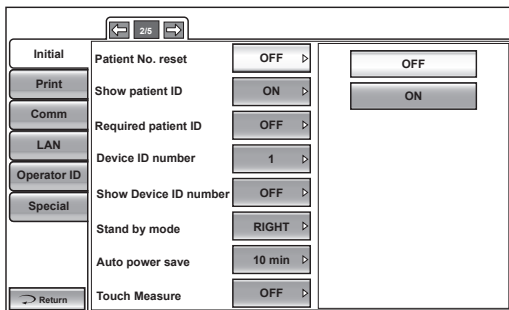
- 3 The setting is complete.

 NOTE	Only in CT-1P.
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RESETTING THE PATIENT NO.

It is possible to set whether or not to reset the patient No. upon power on. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Patient No. reset" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

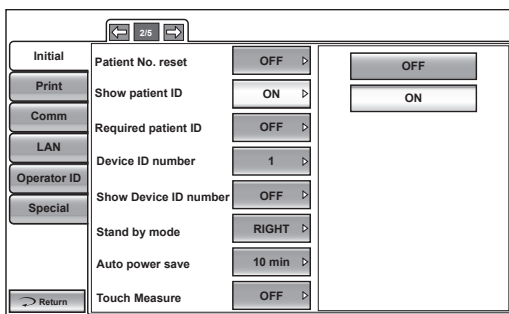


- 3 The setting is complete.

DISPLAYING THE PATIENT ID

It is possible to set whether or not to display the patient ID. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Show patient ID" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

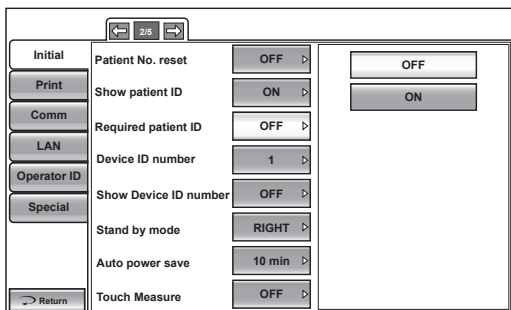


- 3 The setting is complete.


SETTING THE REQUIRED PATIENT ID

It is possible to set whether or not to require the patient ID. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Required patient ID" in the "Initial" menu.



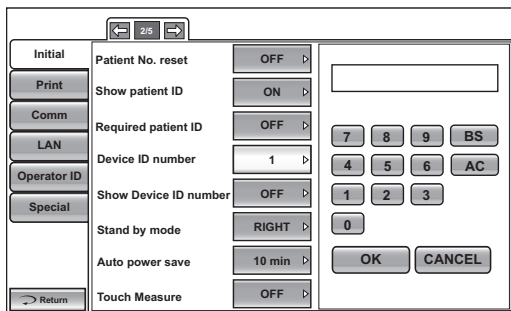
- 2 Tap the **Options** button and select "ON" or "OFF."
- 3 The setting is complete.

 NOTE	When outputting, patient ID is not inputted, a warning is displayed if the setting is ON.
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SETTING THE DEVICE ID NUMBER

The device ID number can be set. Before shipment, the default setting is "1".

- 1 Tap the **Current Condition** button of the set item display "Device ID number " in the "Initial" menu.
- 2 Enter the number with the ten-key display of the **Options** button.

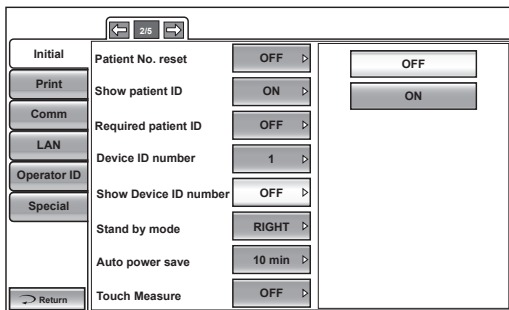


- 3 The setting is complete by tapping the **OK** button.

DISPLAYING THE DEVICE ID NUMBER

It is possible to set whether or not to display the device ID number. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Show Device ID number" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON (display)" or "OFF (do not display)."

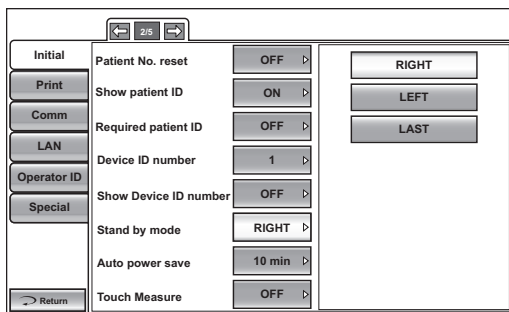


- 3 The setting is complete.

SETTING THE WAITING POSITION AFTER MEASUREMENT

It is possible to set the waiting position of the measuring head after finishing each measurement. Before shipment, the default setting is "RIGHT" (initial position for measuring right eye).

- 1 Tap the **Current Condition** button of the set item display "Stand by mode" in "Initial" menu.

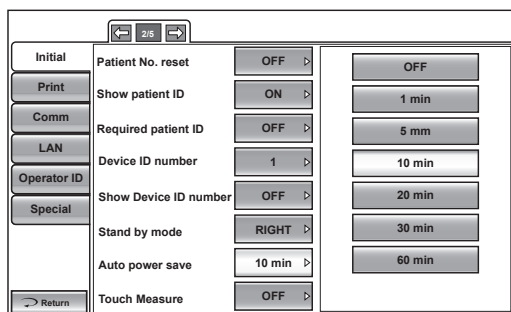


- 2 Tap the **Options** button and select the desired waiting position:
"RIGHT": Waiting at the initial position for right eye measurement
"LEFT": Waiting at the initial position for left eye measurement
"LAST": Waiting at the last position of the measured eye
- 3 The setting is complete.


SETTING THE AUTO POWER SAVE

The power save timer can be set. Before shipment, the default setting is "10 min" (to get to the power save status in 10min).

- 1 Tap the **Current Condition** button of the set item display "Auto power save" in the "Initial" menu.



- 2 Tap the **Options** button and select "OFF," "1 min," "5 min," "10 min," "20 min," "30 min" or "60 min".

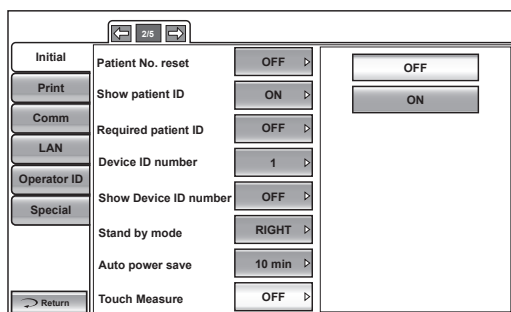
 NOTE	When "OFF" is set, the power save function does not work.
---	---

- 3 The setting is complete.

SETTING THE TOUCH MEASUREMENT


On the manual measurement with patient eye enlargement, whether or not to perform touch measurement can be set. Before shipment, the default setting is "OFF".

- 1 Tap the **Current Condition** button of the set item display "Touch Measure" in the "Initial" menu.



- 2 Tap the **Options** button and select ON (to perform touch measurement) or OFF (not to perform touch measurement)."

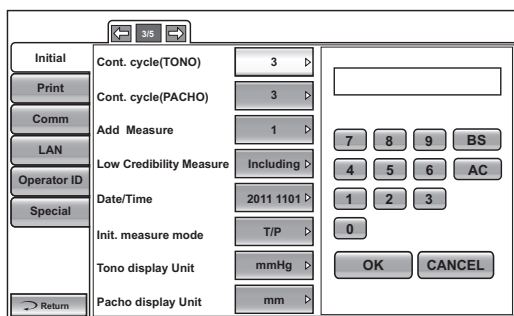
- 3 The setting is complete.

 NOTE	When the setting is "OFF", alignment operation remains on the enlarged display.
---	---

SETTING THE NUMBER OF CONTINUOUS MEASUREMENTS (TONO)

The number of continuous measurements (TONO) can be set. Before shipment, the default setting is "3."

- 1 Tap the **Current Condition** button of the set item display "Cont. cycle(TONO)" in the "Initial" menu.



- 2 Tap the **Options** button and enter the number with the ten-key display.
- 3 The setting is complete by tapping the **OK** button.



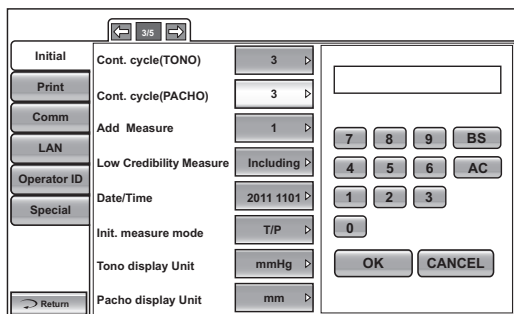
NOTE

The input number range is 2-10.

SETTING THE NUMBER OF CONTINUOUS MEASUREMENTS (PACHO)

The number of continuous measurements (PACHO) can be set. Before shipment, the default setting is "3."

- 1 Tap the **Current Condition** button of the set item display "Cont. cycle(PACHO)" in the "Initial" menu.



- 2 Tap the **Options** button and enter the number with the ten-key display.
- 3 The setting is complete by tapping the **OK** button.



NOTE

- The input number range is 2-10.
- Only in CT-1P.


SETTING THE ADDITIONAL MEASUREMENT

The number of additional measurements can be set. Before shipment, the default setting is "1".

- 1 Tap the **Current Condition** button of the set item display "Add Measure" in the "Initial" menu.

Initial	Cont. cycle(TONO)	3	
Print	Cont. cycle(PACHO)	3	
Comm	Add Measure	1	
LAN	Low Credibility Measure	Including	
Operator ID	Date/Time	2011 1101	
Special	Init. measure mode	T/P	
	Tono display Unit	mmHg	
	Pacho display Unit	mm	
Return			

- 2 Tap the **Options** button and enter the number by the ten-key display.
- 3 The setting is completed by tapping the **OK** button.

	<p>NOTE The input number range is 0-99.</p>
---	--

SETTING LOW CREDIBILITY MEASUREMENT

It is possible to select whether the value of low reliability is included to count cycle of measurement or not. Before shipment, the default setting is "Including."

- 1 Tap the **Current Condition** button of the set item display "Low Credibility Measure" in the "Initial" menu.

Initial	Cont. cycle(TONO)	3	
Print	Cont. cycle(PACHO)	3	
Comm	Add Measure	1	
LAN	Low Credibility Measure	Including	
Operator ID	Date/Time	2011 1101	
Special	Init. measure mode	T/P	
	Tono display Unit	mmHg	
	Pacho display Unit	mm	
Return			

- 2 Tap the **Options** button and select Including (the value of low reliability is included) or No Including (the value of low reliability is excluded)."
- 3 The setting is complete.

SETTING THE DATE AND TIME (DATE/TIME)

Date and time can be set. Before shipment, the default setting is "Installation date/time".

- 1 Tap the **Current Condition** button of the set item display "Date/Time" in the "Initial" menu.
The input screen is displayed.

Initial	Cont. cycle(TONO)	3	Y	11	M	11	D	01
Print	Cont. cycle(PACHO)	3	H	07	M	37	S	51
Comm	Add Measure	1	7	8	9	BS		
LAN	Low Credibility Measure	Including	4	5	6	AC		
Operator ID	Date/Time	2011 11 01	1	2	3			
Special	Init. measure mode	T/P	0					
	Tono display Unit	mmHg	OK					
	Pacho display Unit	mm						
Return								

- 2 Tap and select the item to be set (year, month, day, hour, minute, second), and enter the number with the ten-key display shown above.
- 3 The setting is completed by tapping the **OK** button.

SETTING THE INITIAL MEASUREMENT MODE

The initial measurement mode, at power on, can be changed. Before shipment, the default setting is "T/P."

- 1 Tap the **Current Condition** button of the set item display "Init. measure mode" in the "Initial" menu.
- 2 Tap the **Options** button and select T/P or TONO.

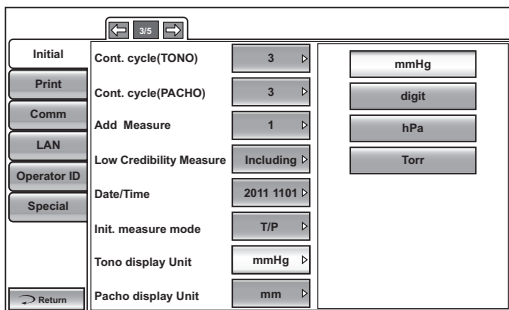
Initial	Cont. cycle(TONO)	3	TONO
Print	Cont. cycle(PACHO)	3	T/P
Comm	Add Measure	1	
LAN	Low Credibility Measure	Including	
Operator ID	Date/Time	2011 11 01	
Special	Init. measure mode	T/P	
	Tono display Unit	mmHg	
	Pacho display Unit	mm	
Return			

- 3 The setting is complete.


SETTING THE DISPLAY UNIT OF OCULAR PRESSURE MEASUREMENT VALUES (TONO)

The display unit of ocular pressure measurement values can be changed. Before shipment, the default setting is "mmHg."

- 1 Tap the **Current Condition** button of the set item display "Tono display Unit" in the "Initial" menu.
- 2 Tap the **Options** button and select "mmHg," "digit," "hPa," "Torr."



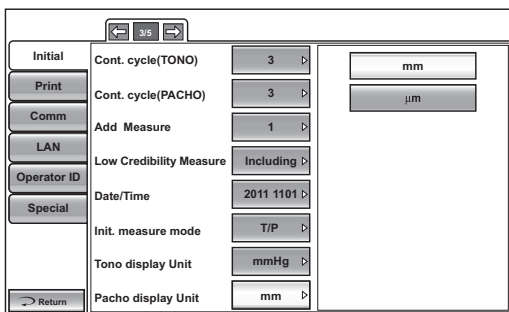
- 3 The setting is complete.

 NOTE	<p>When "hPa" is selected, hPa values and values after mmHg conversion will be displayed by "DISPLAYING ALL MEASUREMENT DATA." See page 59 for details.</p>
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SETTING THE DISPLAY UNIT OF CORNEA THICKNESS MEASUREMENT VALUES (PACHO)

The display unit of cornea thickness measurement value can be changed. Before shipment, the default setting is "mm."

- 1 Tap the **Current Condition** button of the set item display "Pacho display unit" in the "Initial" menu.
- 2 Tap the **Options** button and select "mm" or "μm."



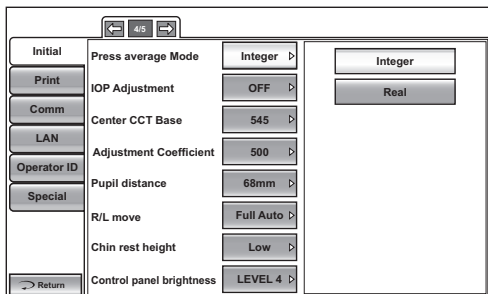
- 3 The setting is complete.

 NOTE	<p>Only in CT-1P.</p>
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SETTING THE AVERAGE VALUE OF THE OCULAR PRESSURE MEASUREMENT MODE

The display of average value of the ocular pressure measurement value can be changed. Before shipment, the default setting is "Integer."

- 1 Tap the **Current Condition** button of the set item display "Press average mode" in the "Initial" menu.
- 2 Tap the **Options** button and select "Integer" or "Real."

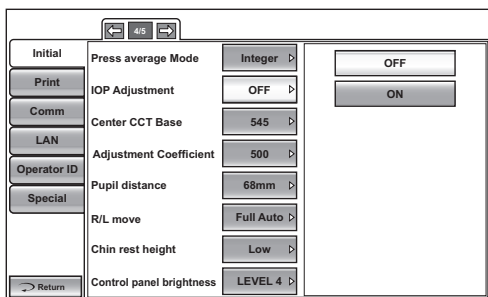


- 3 The setting is complete.

SETTING THE IOP ADJUSTMENT

Intraocular pressure adjustment can be set. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "IOP Adjustment" in the "Initial" menu.



- 2 Tap the **Options** button and select "OFF" or "ON."
- 3 The setting is complete.

The adjusted IOP can be determined by the equation below:

$$\text{Adjusted IOP}^{*1} = \text{Measured IOP} - (\text{Measured CCT} - A) \times (B/10000)^{*2}$$

A :Center CCT Base


B :Adjustment Coefficient

IOP : Intraocular pressure [mmHg]

CCT : Central corneal thickness [μm]

*1 :The adjusted IOP that is calculated on A and B is just a reference value.

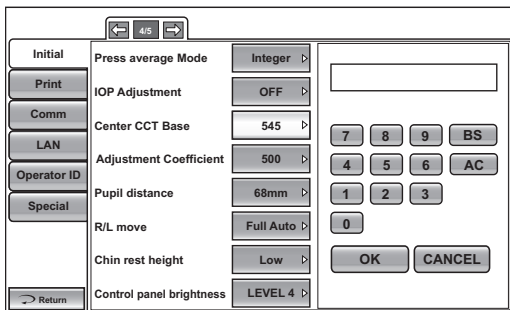
*2 :A correction factor inputs a value integrally.

 NOTE	Only in CT-1P.
---	----------------


SETTING THE CENTRAL CORNEA THICKNESS BASE VALUE

The central cornea thickness base value can be set.
Before shipment, the default setting is "545."

- 1 Tap the **Current Condition** button of the set item display "Center CCT Base" in the "Initial" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.



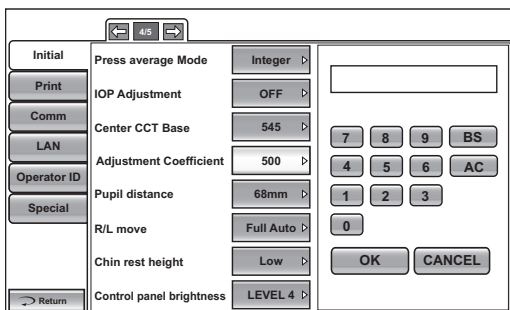
- 3 The setting is complete by tapping the **OK** button.

	NOTE	Only in CT-1P.
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SETTING THE ADJUSTMENT COEFFICIENT

The adjustment coefficient can be set.
Before shipment, the default setting is "500."

- 1 Tap the **Current Condition** button of the set item display "Adjustment Coefficient" in the "Initial" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.



- 3 The setting is complete by tapping the **OK** button.

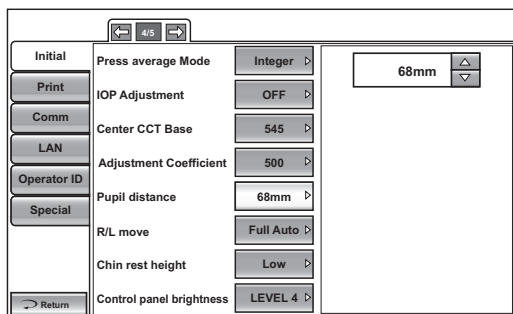
	NOTE	Only in CT-1P.
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SETTING THE PUPIL DISTANCE

The pupil distance can be set.

Before shipment, the default setting is "68mm".

- 1 Tap the **Current Condition** button of the set item display "Pupil distance" in the "Initial" menu.
- 2 Tap the **Options** button and press the **▲** up or **▼** down button to set the value.

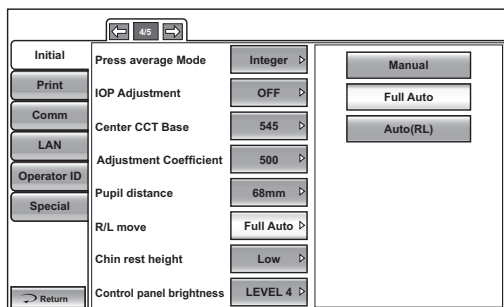


- 3 The setting is complete.

SETTING THE R/L MOVE

The R/L move can be set. Before shipment, the default setting is "Full Auto."

- 1 Tap the **Current Condition** button of the set item display "R/L move" in the "Initial" menu.
- 2 Tap the **Options** button and select "Manual", "Full Auto", "Auto(RL)."



- 3 The setting is complete.



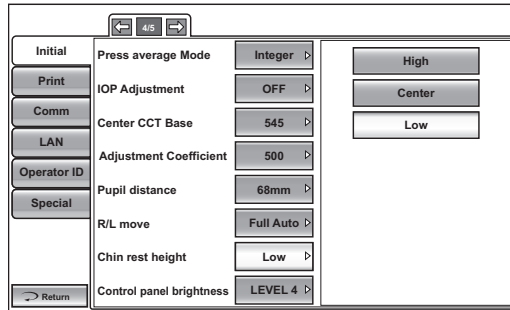
NOTE

- If the "Manual" is selected, move the measuring head to the other eye side by pressing the **(R)** button or **(L)** button.
- If the "Full auto" is selected, the measuring head moves to the other eye side and a measurement is performed automatically.
- If the "Auto(RL)" is selected, the measuring head moves automatically to the other eye side.

SETTING THE CHINREST HEIGHT

The Chinrest height can be set. Before shipment, the default setting is "Low."

- 1 Tap the **Current Condition** button of the set item display "Chin rest height" in the "Initial" menu.
- 2 Tap the **Options** button and select "High", "Center" or "Low."

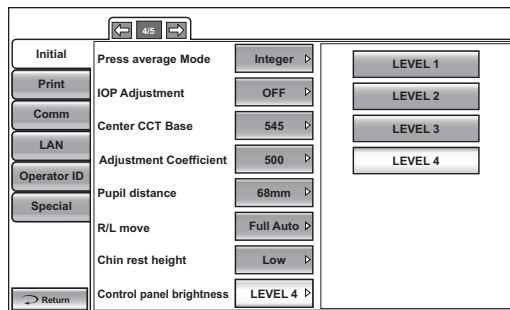


- 3 The setting is complete.

SETTING THE CONTROL PANEL BRIGHTNESS

The control panel brightness can be set in 4 steps. Before shipment, the default setting is "LEVEL 4."

- 1 Tap the **Current Condition** button of the set item display "Control panel brightness" in the "Initial" menu.
- 2 Tap the **Options** button and select the control panel brightness.

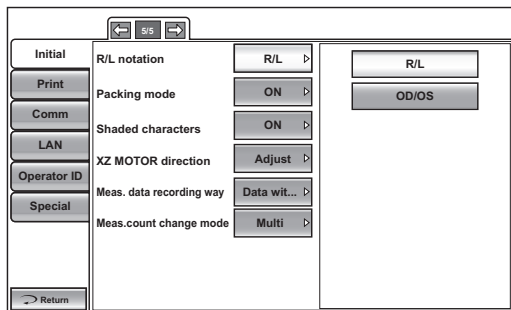


- 3 The setting is complete.
LEVEL 1 :The brightness of the Control panel is changed to the darkest setting of the four steps.
LEVEL 2 :The brightness of the Control panel is changed to the second darkest setting of the four steps.
LEVEL 3 :The brightness of the Control panel is changed to the second brightest setting of the four steps.
LEVEL 4 :The brightness of the Control panel is changed to the brightest setting of the four steps.

SETTING THE R/L NOTATION

The R/L notation can be set. Before shipment, the default setting is "R/L."

- 1 Tap the **Current Condition** button of the set item display "R/L notation" in the "Initial" menu.
- 2 Tap the **Options** button and select "R/L" or "OD/OS."



- 3 The setting is complete.
R/L : Right (Right eye), Left (Left eye)
OD/OS : Oculus Dexter (Right eye), Oculus Sinister (Left eye)

SETTING THE PACKING MODE

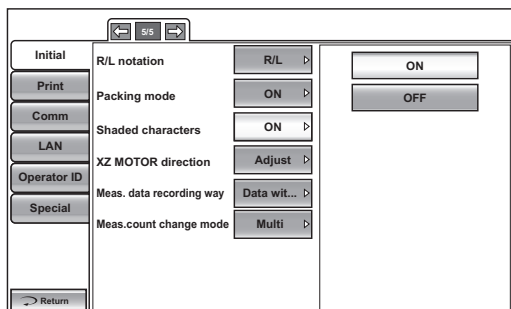
It is possible to set the machine to the mode for packing.

- 1 Tap the **Execute** button of the set item display "Packing mode" in the "Initial" menu.
- 2 A message "Please wait until packing mode is finished." will be displayed.
- 3 When the operation is complete, a message "Packing mode is finished. Please turn off the device." will be displayed.
- 4 The setting is completed by shutting off the power.

SETTING THE SHADED CHARACTERS

The shaded characters can be set. Before shipment, the default setting is "ON".

- 1 Tap the **Current Condition** button of the set item display "Shaded characters" in the "Initial" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

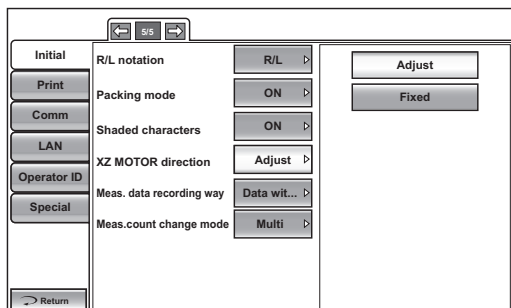


- 3 The setting is complete.

SETTING THE XZ MOTOR DIRECTION

The XZ motor direction can be changed. Before shipment, the default setting is "Adjust."

- 1 Tap the **Current Condition** button of the set item display "XZ MOTOR direction" in the "Initial" menu.
- 2 Tap the **Options** button and select "Adjust" or "fixed".

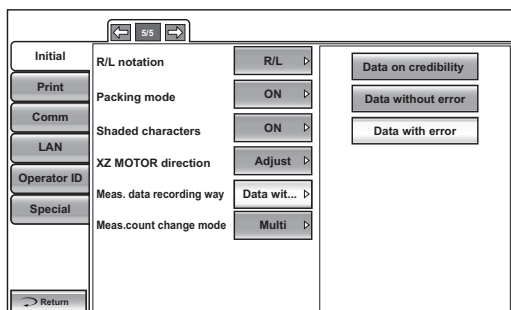


- 3 The setting is complete.
Adjust: The moving direction selected by continuously pushing on control panel changes according to control panel position.
Fixed: The moving direction selected by continuously pushing on control panel does not change regardless of control panel position.

SETTING THE MEASUREMENT DATA RECORDING WAY

The measurement data recording way can be selected. Before shipment, the default setting is "Data with error."

- 1 Tap the **Current Condition** button of the set item display "Meas. data recording way" in the "Initial" menu.
- 2 Tap the **Options** button and select "Data on credibility", "Data without error" or "Data with error".

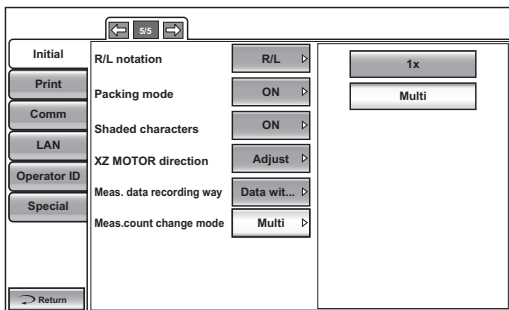


- 3 The setting is complete.
Data on credibility: Measurement data is displayed in the order from low to high reliability.
Data without error: The measurement data without error is displayed.
Data with error: All the measurement data (including data with error) is displayed.

SETTING THE MEASUREMENT COUNT CHANGE MODE

The measurement count change mode can be selected. Before shipment, the default setting is "Multi."

- 1 Tap the **Current Condition** button of the set item display "Meas.count change mode" in the "Initial" menu.
- 2 Tap the **Options** button and select "1x" or "Multi".

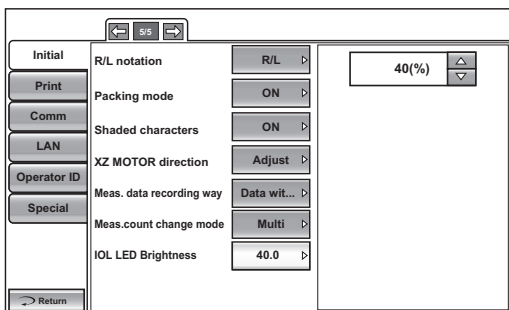


- 3 The setting is complete.
1x: Meas.count change mode is set to "1x" (measurement once) upon power on.
Multi: Meas.count change mode is set to "Multi" (specified number of measurement times) upon power on.


SETTING THE IOL LED BRIGHTNESS

The IOL LED brightness can be selected. Before shipment, the default setting is "40%".

- 1 Tap the **Current Condition** button of the set item display "IOL LED brightness" in the "Initial" menu.
- 2 Tap the **▲** up or **▼** down button to set the value of LED brightness.



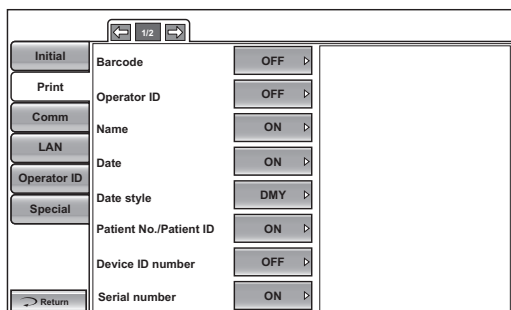
- 3 The setting is complete.

 NOTE	Only in CT-1.
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SETTING THE PRINTER

PRINT contains settings related to output from the printer.

- 1 Tap the index "Print" of the "SETUP screen." The set items for the print setting are displayed.



NOTE

To exit from this screen

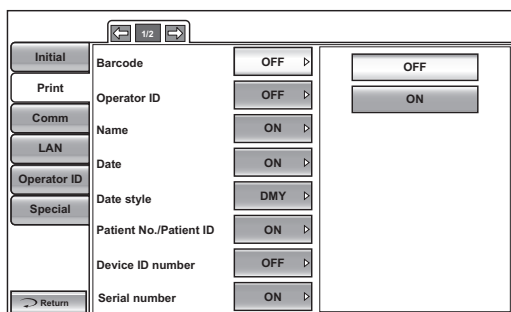
- Tap the **Return** button.
- The "SETUP screen" is exited and the "MEASUREMENT screen" returns.

- 2 Tap the **NEXT PAGE** button, as needed, until the set item to be checked/changed is displayed.

SETTING THE BARCODE

The barcode can be displayed on the printout. Before shipment, the default setting is "OFF" (Do not print barcode).

- 1 Tap the **Current Condition** button of the set item display "Barcode" in the "Print" menu.



- 2 Tap the **Options** button and select "ON (Print Barcode)" or "OFF (Do not print Barcode)."
- 3 The setting is complete.



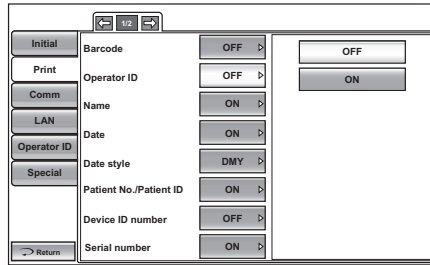
NOTE

The printed barcode is created from the Device ID number and the Patient No.

SETTING THE OPERATOR ID

The operator ID can be displayed on the printout. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Operator ID" in the "Print" menu.

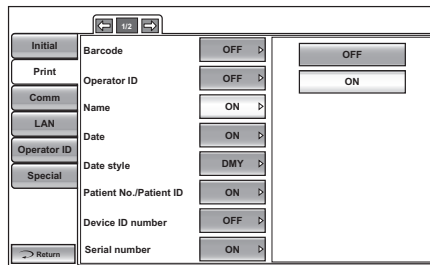


- 2 Tap the **Options** button and select "ON" or "OFF."
- 3 The setting is complete.

SETTING THE NAME COLUMN

The name column can be displayed on the printout. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Name" in the "Print" menu.

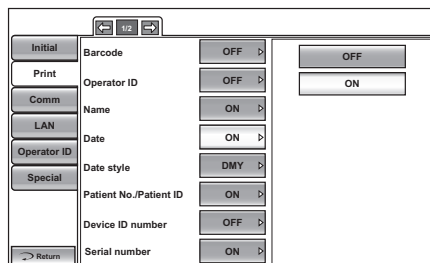


- 2 Tap the **Options** button and select "ON" or "OFF."
- 3 The setting is complete.

PRINTING THE DATE

The measurement date can be displayed on the printout. Before shipment, the default setting is "ON (Print date)".

- 1 Tap the **Current Condition** button of the set item display "Date" in the "Print" menu.



- 2 Tap the **Options** button and select "ON (Print date)" or "OFF (Do not print date)".



NOTE

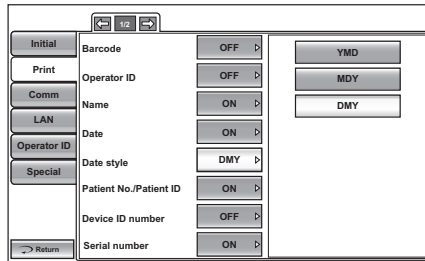
When the built-in battery runs out, an incorrect date is printed. For battery change, contact your dealer or TOPCON at the address/ phone shown on the back cover.

- 3 The setting is complete.

SETTING THE DATE STYLE

The date style can be set. Before shipment, the default setting is "DMY."

- 1 Tap the **Current Condition** button of the set item display "Date style" in the "Print" menu.



- 2 Tap the **Options** button and select "YMD", "MDY" or "DMY."

- 3 The setting is complete.

"YMD" :Print in year/month/day format

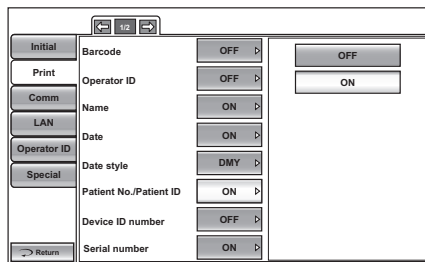
"MDY" :Print in month/day/year format

"DMY" :Print in day/month/year format

SETTING THE PATIENT NO./ PATIENT ID

The Patient No./Patient ID can be set. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Patient No./Patient ID" in the "Print" menu.



- 2 Tap the **Options** button and select "ON" or "OFF."

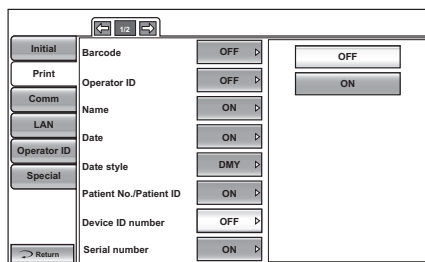
- 3 Setting is complete.

PRINTING THE DEVICE ID NUMBER

The device ID number can be displayed on the printout.

Before shipment, the default setting is "OFF (Do not print device ID number)".

- 1 Tap the **Current Condition** button of the set item display "Device ID number" in the "Print" menu.



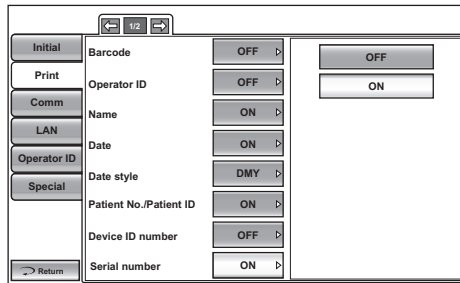
- 2 Tap the **Options** button and select "ON (Print device ID number)" or "OFF (Do not print device ID number)".

- 3 The setting is complete.

PRINTING THE SERIAL NUMBER

The serial number can be displayed on the printout.
Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Serial number" in the "Print" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

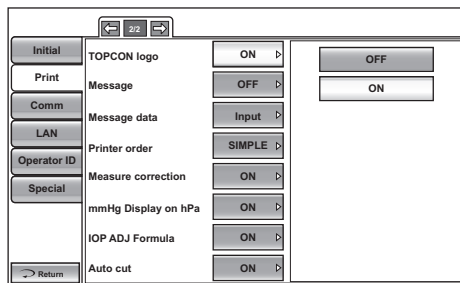


- 3 The setting is complete.

PRINTING THE TOPCON LOGO

The TOPCON logo can be displayed on the printout.
Before shipment, the default setting is "ON (Print TOPCON logo)".

- 1 Tap the **Current Condition** button of the set item display "TOPCON logo" in the "Print" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

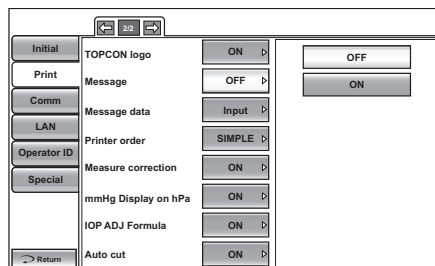


- 3 The setting is complete.

SETTING THE MESSAGE

It is possible to set the message data print to "ON" or "OFF." Before shipment, the default setting is "OFF".

- 1 Tap the **Current Condition** button of the set item display "Message" in the "Print" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

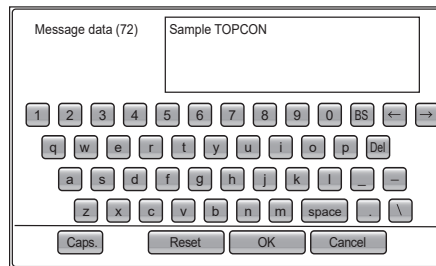


- 3 The setting is complete.

SETTING THE MESSAGE DATA

The message data can be set.

- 1 Tap the **Current Condition** button of the set item display "Message data" in the "Print" menu.
- 2 The message input screen is displayed, and enter desired character with keyboard.

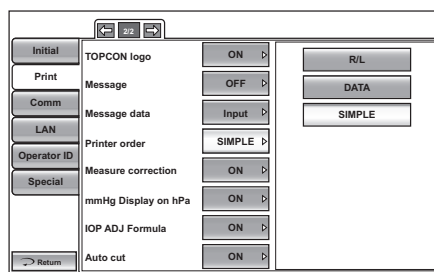


- 3 The setting is completed by tapping the **OK** button.

SETTING THE PRINTING ORDER

The printing order can be set. Before shipment, the default setting is "SIMPLE."

- 1 Tap the **Current Condition** button of the set item display "Printer order" in the "Print" menu.
- 2 Tap the **Options** button and select "R/L", "DATA" or "SIMPLE."



- 3 The setting is complete.



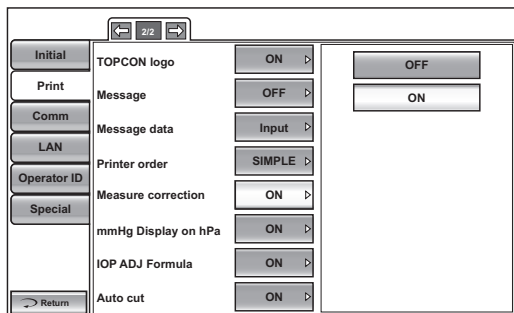
NOTE

- When the printing order is set to "SIMPLE," the measurement data of the latest three measurements are printed.
- Once the printing order is set to "SIMPLE," the result of cornea thickness is printed in " μm " unit, even if display unit is set to "mm".

SETTING THE MEASUREMENT CORRECTION VALUE

The measurement correction value can be set. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Measure correction" in the "Print" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."



- 3 The setting is complete.



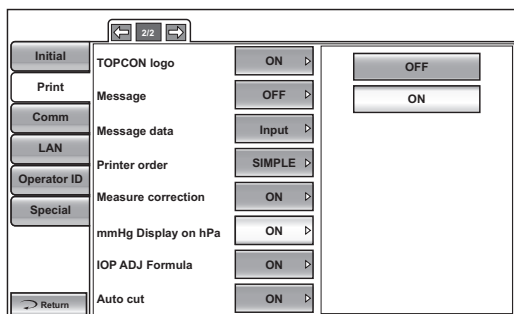
NOTE

- The measurement correction value is calculated by the calculation formula in "SETTING THE IOP ADJUSTMENT" in the "Initial" menu. For details, see page 102.
- Only in CT-1P

SETTING THE mmHg DISPLAY UNIT ON hPa

When the "Display Unit of Ocular Pressure Measurement Value" in the "Initial" menu is "hPa," the operator can set whether or not to print out the intraocular pressure measurement values in both hPa and mmHg units. Before shipment, the default setting is "ON".

- 1 Tap the **Current Condition** button of the set item display "mmHg Display on hPa" in the "Print" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."



- 3 The setting is complete.



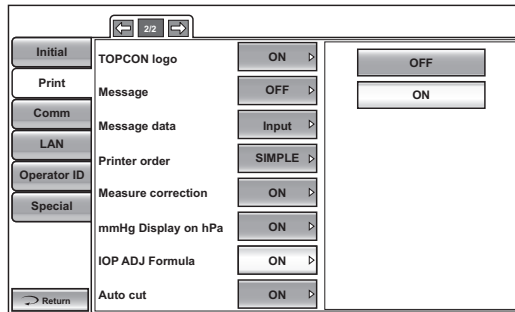
NOTE

When the printing order is set to "SIMPLE", the setup display unit of the display unit ocular pressure measurement values(TONO) is only printed, regardless of the setup the mmHg display unit on hPa.

SETTING THE IOP ADJ FORMULA

It is possible to set printing of Center CCT Base and Adjustment Coefficient for IOP ADJ formula. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "IOP ADJ Formula" in "Print" menu.



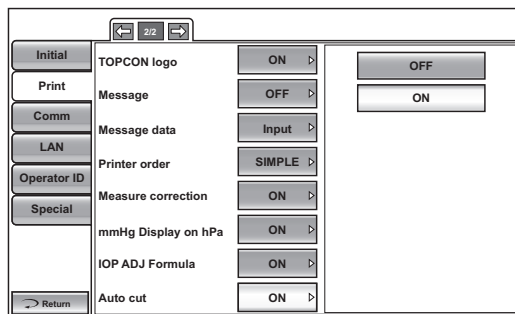
- 2 Tap the **Options** button and select "ON" or "OFF."
- 3 The setting is complete.

 NOTE	Only in CT-1P.
---	----------------


SETTING THE AUTO CUT

It is possible to set auto cutting. Before shipment, the default setting is "ON."

- 1 Tap the **Current Condition** button of the set item display "Auto cut" in "Print" menu.



- 2 Tap the **Options** button and select "ON" or "OFF."
- 3 The setting is complete.

 NOTE	When the Auto cut setting is off and you need to cut a printer form, the way is that erase the measurement value by tapping the ALL CLEAR button, and tap the PRINT OUT button.
---	---

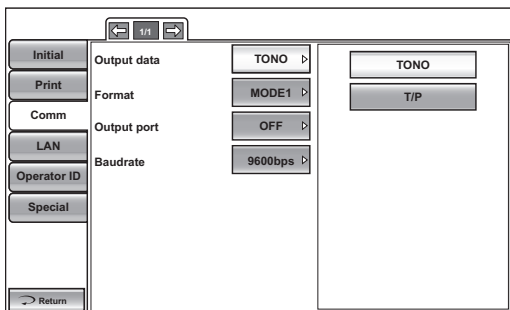
DATA COMMUNICATION

The COMM menu contains settings related to data output with the external device.

SETTING THE OUTPUT DATA STYLE

The output data style can be set. Before shipment, the default setting is "TONO."

- 1 Tap the **Current Condition** button of the set item display "Output data" in the "Comm" menu.
- 2 Tap the **Options** button and select "TONO" or "T/P".



- 3 The setting is complete.



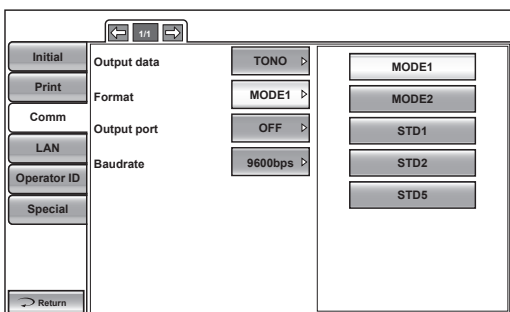
NOTE

Only in CT-1P.

SETTING THE FORMAT

The format can be set. Before shipment, the default setting is "MODE1."

- 1 Tap the **Current Condition** button of the set item display "Format" in the "Comm" menu.
- 2 Tap the **Options** button and select "MODE1", "MODE2", "STD1", "STD2" or "STD5".



- 3 The setting is complete.

MODE1 : Average value output format

MODE2 : Latest value output format

STD1 : TOPCON STD1 format

STD2 : TOPCON STD2 format

STD5 : TOPCON STD5 format



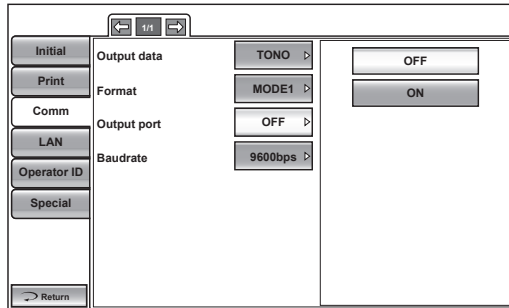
NOTE

According to the selected measurement mode of "SETTING THE OUTPUT DATA STYLE" in the "Data communication" menu, assignment of a format is possible.(only in CT-1P)

SETTING THE OUTPUT PORT

The output port can be set. Before shipment, the default setting is "OFF".

- 1 Tap the **Current Condition** button of the set item display "Output port" in the "Comm" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."

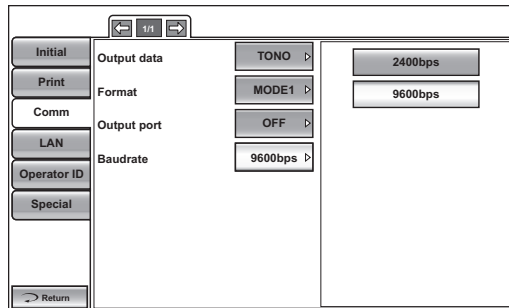


- 3 The setting is complete.

SETTING THE BAUDRATE

The baud rate can be set. Before shipment, the default setting is "9600bps."

- 1 Tap the **Current Condition** button of the set item display "Baudrate" in the "Comm" menu.
- 2 Tap the **Options** button and select "2400bps" or "9600bps."



- 3 The setting is complete.

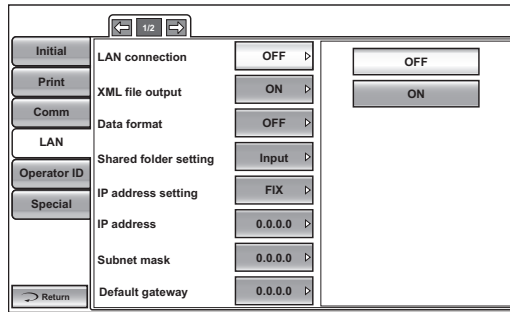
LAN CONNECTION

The LAN menu contains settings related to data output to the LAN.

SETTING THE LAN CONNECTION

The LAN connection can be set. Before shipment, the default setting is "OFF."

- 1** Tap the **Current Condition** button of the set item display "LAN connection" in the "LAN" menu.
- 2** Tap the **Options** button and select "ON" or "OFF."

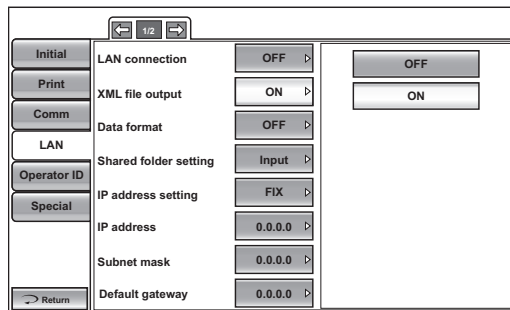


- 3** The setting is complete.

SETTING THE XML FILE OUTPUT

The XML file output can be set. Before shipment, the default setting is "ON."

- 1** Tap the **Current Condition** button of the set item display "XML file output" in the "LAN" menu.
- 2** Tap the **Options** button and select "ON" or "OFF".

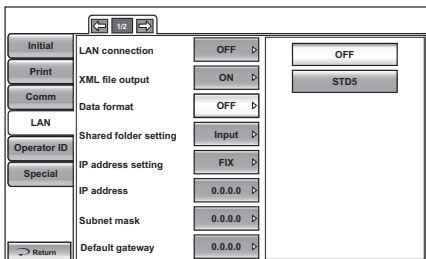


- 3** The setting is complete.

SETTING THE DATA OUTPUT FORMAT

The data output format can be set. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Data format" in the "LAN" menu.
- 2 Tap the **Options** button and select "OFF" or "STD5."

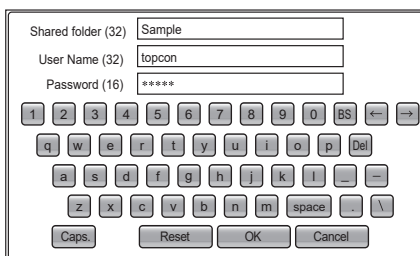


- 3 The setting is complete.
 OFF : Data file is not outputted
 STD5 : TOPCON STD5 format

SETTING THE SHARED FOLDER

The shared folder can be set. Before shipment, the default setting is "NULL"

- 1 Tap the **Current Condition** button of the set item display "Shared folder setting" in the "LAN" menu.
- 2 The message input screen is displayed. Enter the desired character with the keyboard.

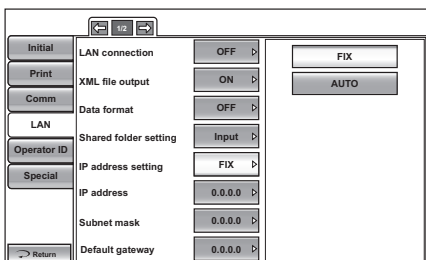


- 3 The setting is completed by tapping the **OK** button.

SETTING THE IP ADDRESS SETTING

The IP address setting can be set to "Fix" or "Auto". Before shipment, the default setting is "Fix."

- 1 Tap the **Current Condition** button of the set item display "IP address setting" in the "LAN" menu.
- 2 Tap the **Options** button and select "FIX (Set IP address to fix)" or "AUTO (Set IP address to auto)".

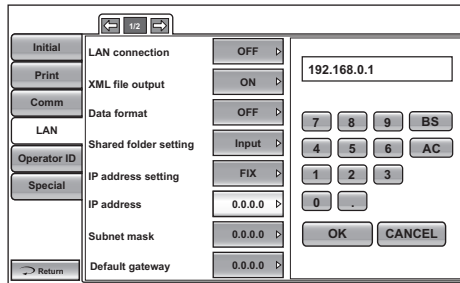


- 3 The setting is complete.

SETTING THE IP ADDRESS

The IP address can be set. Before shipment, the default setting is "0.0.0.0".

- 1 Tap the **Current Condition** button of the set item display "IP address" in the "LAN" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.

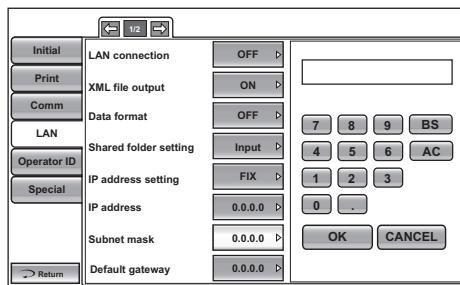


- 3 The setting is completed by tapping the **OK** button.

SETTING THE SUBNET MASK

The subnet mask can be set. Before shipment, the default setting is "0.0.0.0".

- 1 Tap the **Current Condition** button of the set item display "Subnet mask" in the "LAN" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.

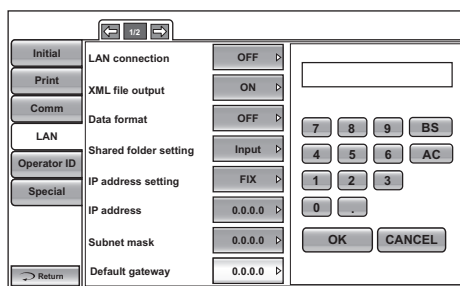


- 3 The setting is completed by tapping the **OK** button.

SETTING THE DEFAULT GATEWAY

The default gateway can be set. Before shipment, the default setting is "0.0.0.0".

- 1 Tap the **Current Condition** button of the set item display "Default gateway" in the "LAN" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.

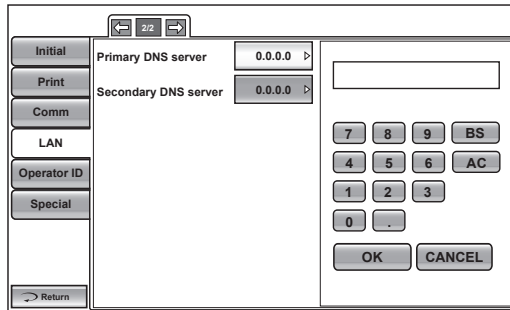


- 3 The setting is completed by tapping the **OK** button.

SETTING THE PRIMARY DNS SERVER

The primary DNS server can be set. Before shipment, the default setting is "0.0.0.0".

- 1 Tap the **Current Condition** button of the set item display "Primary DNS server" in the "LAN" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.

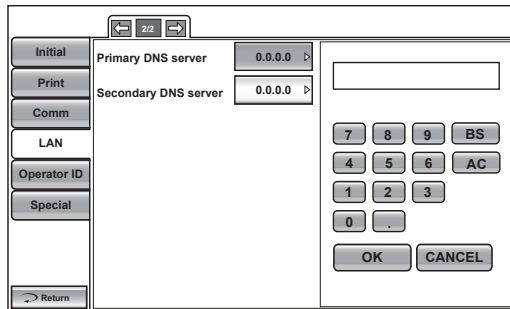


- 3 The setting is completed by tapping the **OK** button.

SETTING THE SECONDARY DNS SERVER

The secondary DNS server can be set. Before shipment, the default setting is "0.0.0.0".

- 1 Tap the **Current Condition** button of the set item display "Secondary DNS server" in the "LAN" menu.
- 2 Tap the **Options** button and enter the number with the ten-key display.



- 3 The setting is completed by tapping the **OK** button.

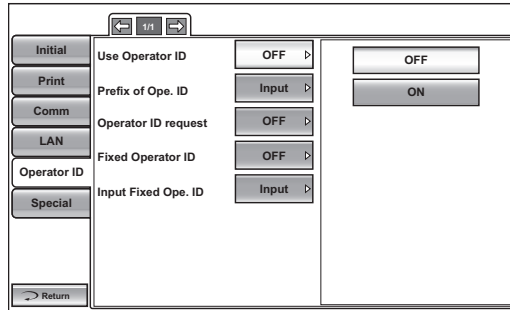
OPERATOR ID

The Operator ID menu contains settings related to Operator ID.

SETTING THE USE OPERATOR ID FUNCTION

The "Use Operator ID" function can be set. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Use operator ID" in the "Operator ID" menu.
- 2 Tap the **Options** button and select "ON" or "OFF".

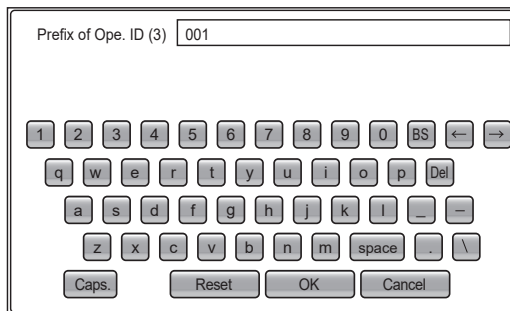


- 3 The setting is complete.

SETTING THE PREFIX OF OPERATOR ID FUNCTION

The prefix of operator ID can be set. Before shipment, the default setting is "NULL."

- 1 Tap the **Current Condition** button of the set item display "Prefix of Ope. ID" in the "Operator ID" menu.
- 2 Tap the **Options** button, and enter the desired character with the keyboard.

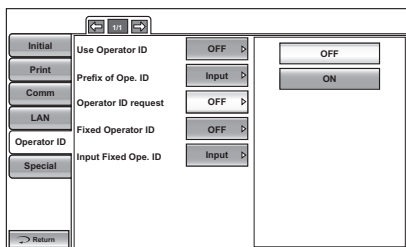


- 3 The setting is completed by tapping the **OK** button.

SETTING THE OPERATOR ID REQUEST

The operator ID request can be set. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Operator ID request" in the "Operator ID" menu.
- 2 Tap the **Options** button and select "ON" or "OFF."



- 3 The setting is complete.



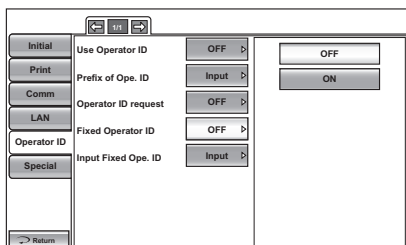
NOTE

When outputting, operator ID is not inputted, a warning is displayed if the setting of "Operator ID request" is ON.

SETTING THE FIXED OPERATOR ID

The fixed operator ID can be set. Before shipment, the default setting is "OFF."

- 1 Tap the **Current Condition** button of the set item display "Fixed operator ID" in the "Operator ID" menu.
- 2 Tap the **Options** button and select "ON" or "OFF".

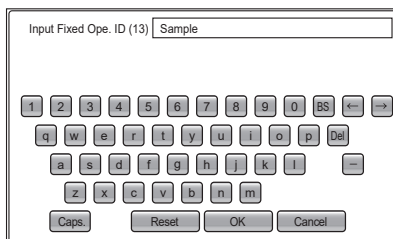


- 3 The setting is complete.

SETTING THE INPUT FIXED OPERATOR ID FUNCTION

The "Input the fixed operator ID" function can be set. Before shipment, the default setting is "NULL."

- 1 Tap the **Current Condition** button of the set item display "Input fixed Ope. ID" in the "Operator ID" menu.
- 2 Tap the **Options** button, and enter the desired character with the keyboard.



- 3 The setting is completed by tapping the **OK** button.

REFERENCE TECHNICAL DATA

THE IOP CORRECTION VALUES



 WARNING	CCT Adjustments are not supported by performance data.
--	--

Table 1 below provides the IOP correction values.

Table 1 :IOP Correction Values

Corneal Thickness (μm)	Correction Values (mmHg)
405	7
425	6
445	5
465	4
485	3
505	2
525	1
545	0
565	-1
585	-2
605	-3
625	-4
645	-5
665	-6
685	-7
705	-8

Correction Values according to corneal thickness of 545 μm
These correction values are modified from the work of Doughty and Zamen.
This chart was reproduced from the Review of Ophthalmology, July 2002
Leon Hemdon, MD Duke University, Glaucoma Service, Pages 88, 89,90.

 NOTE	<ul style="list-style-type: none">• See page 102 and 103 for details.• The above reference technical data is for reference data of CT-1P.
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MAINTENANCE


DAILY CHECKUPS


CLEANING THE INSTRUMENT

- Dust on measuring window glass .. Blow off dust with a blower.
- Fingerprints and oil spots on measuring window glass Blow off dust with a blower and wipe the surface gently with a camera lens cleaner using clean gauze.
- Dirty instrument cover Wipe the surface with the attached silicon cloth or a dry soft cloth. Never use solvents or a chemical duster.

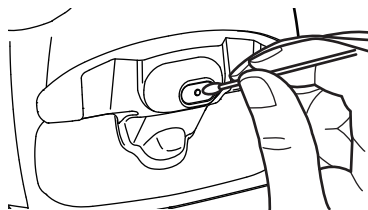
CLEANING THE MEASURING WINDOW GLASS

- To secure auto alignment and correct measurement values, clean the measuring window glass after each day's work.
- Clean the glass when "CLEAN THE MEASURING WINDOW GLASS" is displayed on the control panel screen.

 CAUTION	<ul style="list-style-type: none">• To clean the measuring window glass, measuring nozzle and the glass inside the measuring nozzle, use ethanol. Using other chemicals may cause damage to the patient's eye during measurement.• Do not use tweezers or gauze, as these may scratch the lens and glass surfaces.
--	---


 NOTE	<ul style="list-style-type: none">• Do not apply unreasonable force to the measuring nozzle while cleaning.• To avoid problems, do not leave the cotton fibers inside.• Be sure to use only the attached applicator.
--	--

- 1** Prepare the ethanol.
- 2** Using a blower, remove dust and dirt from the glass surface.
- 3** Moisten the applicator with ethanol.
- 4** Wipe the glass surface lightly with the applicator, from the center outward.




Wiping the glass surface

- 5** Use a new applicator and wipe the glass surface in a similar manner; repeat this several times.


 NOTE	To ensure thorough removal of grease from the measuring window glass, be sure to replace the applicator and use a new one for each of these repeated wiping operations.
---	---


- 6** The Cleaning is completed when grease is thoroughly removed.
If stains cannot be removed easily, call your dealer.

 NOTE	When the measuring window glass becomes stained, "CLEAN THE MEASURING WINDOW GLASS" is displayed on the control panel screen.
---	---

CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE

- If there is any foreign matter on or around the measuring nozzle, it may enter and damage the patient's eye during the measurement. If there is any, clean the measuring nozzle.
- When the glass inside the measuring nozzle becomes stained, it makes the fixation target unclear, causing errors in auto alignment and measurement values. If the fixation target is unclear or measurement values with parentheses are frequent, clean the glass inside the measuring nozzle.
- Clean the glass when "CLEAN INSIDE NOZZLE/GLASS" is displayed on the control panel screen.


 CAUTION	To clean the measuring window glass, measuring nozzle and the glass inside the measuring nozzle, use ethanol. Using other chemicals may cause damage to the patient's eye during measurement.
--	---

 NOTE	<ul style="list-style-type: none">• Do not apply unreasonable force to the measuring nozzle while cleaning.• To avoid problems, do not leave the cotton fibers inside.• Be sure to use only the attached applicator.
---	--


- 1** Prepare ethanol.
- 2** Moisten the applicator with ethanol.
- 3** Insert the applicator into the measuring nozzle, lightly touch the glass surface, and turn the applicator a few times.



- 4** Use a new applicator and wipe the glass surface in a similar manner; repeat this a few times.

 NOTE	The used applicator contains grease and it only scatters grease if used again; the light transmittance is not improved at all. Be sure to replace the applicator and use a new one for each of these repeated cleaning operations.
---	--

- 5** If the fixation target is clearly seen, cleaning is completed. If stains cannot be removed easily, call your dealer.

 NOTE	When the glass becomes stained, "CLEAN INSIDE NOZZLE/GLASS" is displayed on the control panel screen.
---	---

CLEANING THE COMPONENTS THAT COME INTO CONTACT WITH THE PATIENT


When the forehead rest and chinrest become stained, use a neutral tableware detergent and warm water. Dip a soft cloth in the solution, squeeze out the excess water and then wipe off the stain.

CLEANING OF EXTERNAL INPUT / OUTPUT DEVICE

Clean according to each instruction manual

DAILY MAINTENANCE

- For this instrument, dust may cause errors. When not in use, replace the measuring window cap and dust cover.
- When not in use, turn off the POWER switch.

 NOTE	When using the dust cover, tap the END button and move the chinrest and measuring head to their last positions.
--	--

ORDERING CONSUMABLE ITEMS

- When ordering consumable items, tell the product name, product code and quantity to your dealer or TOPCON at the address listed on the back cover.

Product name	Product code
Chinrest tissue	40310 4082
Silicon cloth	44800 1001
Dust cover	42360 9002

Product name	Product code
Applicator	41601 8606
Printer paper	44800 4001
Fuse T 3AL 250V	T2400 0158A



USER MAINTENANCE ITEMS

Item	Inspection time	Contents
Inspection	Before using	<ul style="list-style-type: none"> • The instrument works properly. • The objective lens must be free of stains and/or flaws. • Confirm whether the foreign object is attached to the measuring nozzle and the area around the measuring nozzle. • Air check • Confirm that the safety stopper setting and measuring nozzle do not move to the patient's side beyond the safety stopper setting position.
Cleaning	When the part is stained	<ul style="list-style-type: none"> • Objective lens • External cover, control panel, etc.
Replacement	As required	<ul style="list-style-type: none"> • Fuse • Printer form


MANUFACTURER MAINTENANCE ITEMS


Item	Checking time	Contents
Cleaning each component	Within 12 months	<ul style="list-style-type: none"> • Cleaning outer covers • Checking the optical system • Cleaning POWER unit
Operation check	Within 12 months	<ul style="list-style-type: none"> • Checking the main body operation • Checking switches
Accuracy check	Within 12 months	<ul style="list-style-type: none"> • Confirming the ocular pressure measurement functions (using special tools) • Confirming the cornea thickness measurement functions (using special tools) (only in CT-1P)

BRIGHTNESS ADJUSTMENT OF THE CONTROL PANEL

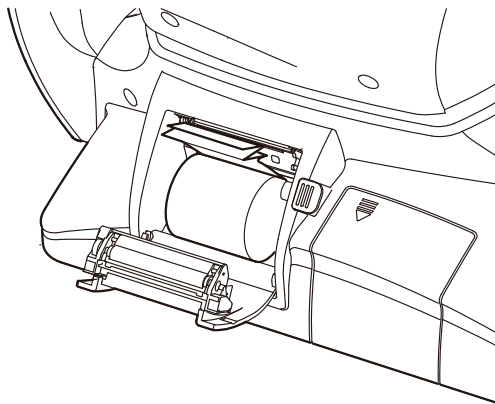
- The control panel is optimally adjusted when shipped.
- For control panel brightness adjustment, see "INITIAL (INITIAL SETTING)," "SETTING THE CONTROL PANEL BRIGHTNESS" (page 105).


PRINTER PAPER JAM

 CAUTION	<ul style="list-style-type: none">• To avoid failure or potential injury, do not open the printer cover while the printer is in operation.• To avoid potential injury in case of malfunction, including a paper jam, be sure to shut off the power before attempting to repair it.• To avoid potential injury, do not touch the printer body including metal parts or the paper cutter, while the printer is in operation or when replacing the printer paper.
--	--

 NOTE	If the printer paper is jammed in the printer, printing will stop and the jam should be cleared.
---	--

1 Shut off the power and open the printer cover, take out the jammed paper pieces.



 NOTE	If the power is turned on to start after removing the jammed printer paper, a blank sheet is printed out by tapping the PRINT OUT button.
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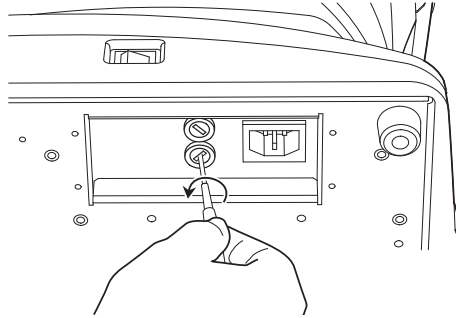
FUSE CHANGE



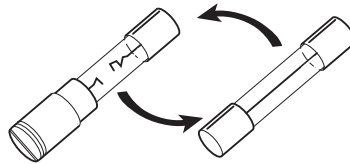
WARNING

- To avoid electric shock during fuse change, be sure to unplug the power cord before removing the fuse lid. Also, do not plug the power cord while the fuse lid is removed.
- Always use the attached fuse (T 3AL 250V). Using any other type may cause malfunction and/or fire.

- 1** Make sure the power is off and the power cord is unplugged.
- 2** Tilt the body slowly so that the power switch comes up and the power inlet at the bottom can be seen.
- 3** Press the fuse holder with a screwdriver and turn it counter-clockwise. The fuse holder can be taken out.

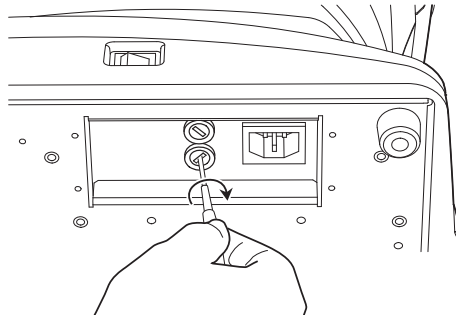


- 4** Replace the fuse with a spare one.



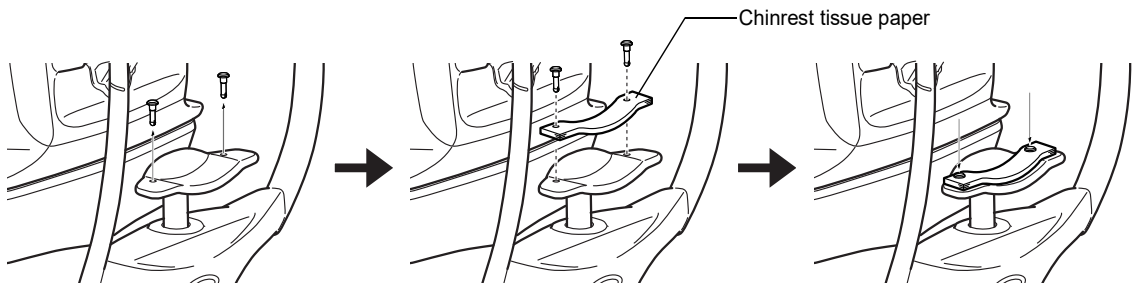
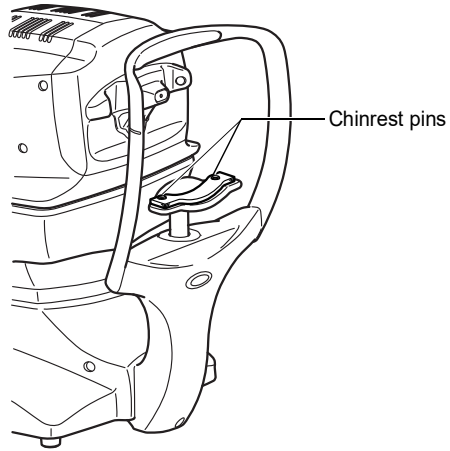
Replacing the fuse

- 5** Press the fuse holder lightly with a screwdriver and turn it clockwise. The fuse holder is set.




REPLACING THE CHINREST TISSUE PAPER


- When the chinrest tissue paper has run out, pull off the chinrest pins and replace it with new tissue paper.



MAINTENANCE


CLEANING THE COVER

 CAUTION	Do not use or apply any aerosol-type cleaner near the instrument. If a drop of cleaner remains inside the measuring nozzle, the patient's eye may be injured during measurement.
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 NOTE	Do not clean plastic parts with solvents. Benzine, thinner, ether and gasoline may cause discoloring and decomposition.
---	---

- 1** If the cover, control panel, etc. get soiled, wipe the surface clean with a dry cloth.
- 2** If the cover is noticeably stained, wipe the surface with a damp cloth which is moistened in a tepid water solution of neutral detergent.

CLEANING THE CONTROL PANEL

 NOTE	<ul style="list-style-type: none">• Since the control panel screen is a touch panel, be sure to turn off the POWER switch before wiping. The touch panel will react and malfunction.• When the monitor cleaner has become dirty, wash it. When washing, rinse it thoroughly so no detergent is left. If any detergent remains, it may cause uneven wiping.
---	---

CONTAMINATION BY DUST

Remove the dust with a soft brush, and wipe with the attached monitor cleaner.

CONTAMINATION BY FINGERPRINTS

Wipe with the attached monitor cleaner.

If the stain still remains, moisten the monitor cleaner with water and then wipe off the stain.

BEFORE REQUESTING SERVICE

TROUBLE-SHOOTING OPERATIONS

MESSAGE LIST

"ERROR"	Displayed when the measurement is an error.* Tell the patient to open their eyes as wide as possible. **"ERROR" is displayed even if it is not within the cornea thickness measurement range (0.4mm - 0.75mm).
"OVER"	Displayed when the measurement range is exceeded. In the 30 range, switch to the 60 range. In the 60 range, measurement cannot be performed for out of measuring range.
"Finished"	Displayed when normal measurements are completed for the set measurement count.
"CLEAN THE MEASURING WINDOW GLASS"	Displayed when a blot is detected on the measuring window during TONO measurement. Clean the measuring window glass by referring to "CLEANING THE MEASURING WINDOW GLASS" on page 125.
"CLEAN INSIDE NOZZLE/GLASS"	Displayed when a blot is detected on the measuring window during TONO measurement. Clean the measuring nozzle and the glass inside the measuring nozzle by referring to "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" on page 126.
"Close printer cover"	The printer cover is open. Close the cover until it clicks.
"Paper end"	Printer paper is used up. Supply printer paper.
"Fatal Error!"	Displayed when the printer unit does not operate normally, such as the cutter does not work. Call the serviceman.
"Patient ID is required. Please set patient ID."	Displayed when the output operation is requested when the setting "Required patient ID" is ON but the patient ID is not inputted. Enter the patient ID and then request the output operation.
"Operator ID is required. Please set Operator ID."	Displayed when the output operation is requested when the setting "Operator ID request" is ON but the operator ID is not inputted. Enter the operator ID and then request the output operation.
"Rescan ID."	Displayed when barcode reader is connected and the print out button is pushed without reading the barcode again in the readable state after reading barcode in the state to be inhibited to read. If this message is displayed, read the barcode again.
"Applying network settings"	Displayed when applying network setting as "LAN connection" in the "LAN" is switched to ON or OFF.
"Please set the limit within 0 mm to 30 mm."	Displayed on the Safety Stopper screen, when the z-axis position is outside the 0-30mm.
"LAN output..."	LAN data output is in process.
"LAN SUCCESS"	LAN data output is completed.

"LAN init error"	Failed to reset the LAN connection. Confirm that the LAN cable connection and the LAN setting are in the correct way.
"LAN hostname error"	Failed to resolve the host name of the destination (to be connected with the shared folder). Confirm the inputted host name or DNS server address.
"LAN mount error"	Failed to connect to the shared folder. Confirm the address, folder name, user name and password of the destination (to be connected with the share folder).
"Permission error of folder"	Failed to create the file. Confirm that write permission to the share folder is set correctly.
"LAN write error"	Failed to write to the file. Check the free space capacity at the save location.
"LAN stop error"	Failed to reset the LAN connection. Confirm that the LAN cable connection and the LAN setting are in the correct way.
"LAN restruct error"	Failed to reset the LAN connection. Confirm that the LAN cable connection and the LAN setting are in the correct way.
"DHCP bind error (Timeout)"	Failed to communicate to DHCP server. Please contact your network administrator of the facility.
"DHCP bind error(NAK)"	Failed to communicate to DHCP server. Please contact your network administrator of the facility.
"Failed to get IP address."	Failed in IP address auto assignment. Set a fixed IP address, or check if the DHCP server is running. Please contact your network administrator of the facility.
"Unknown Error"	Displayed in case of a LAN error other than the LAN errors mentioned previously. Call your service engineer.
"IP address conflict"	Displayed when the IP address is duplicated. Confirm that the IP address setting of main machine is in the correct way.
"Previous measurements are left. Please press the Clear button."	Displayed when the output of all output-set data fails. Previous measurements are left. Please tap the ALL CLEAR button.
"Output not set"	Displayed when all output settings are OFF. Confirm that the output setting is in the correct way.
"No print data, please confirm measurement mode."	Displayed when the measurement mode in measuring differs from the measurement mode in printing. Change to the measurement mode same as in the measuring, and tap the print button.
"RS232C DATAOUT"	RS-232C data output is in process.
"RS232C SUCCESS"	RS-232C data output is completed.
"RS232C FAIL"	Displayed when failed in RS-232C data transmission or failed in initialization for RS-232C connection. Confirm that the RS-232C cable connection and the RS-232C setting are in the correct way.

"Check eyelid"	Displayed when the patient's eyelid covers the pupil. Tell the patient to open their eye as wide as possible.
"Please touch pupil on the screen"	Displayed when the XY position is not aligned. Touch the pupil and bring the screen to the pupil center.
"Please focus"	Displayed when the measuring nozzle position is too far. Press the forward button and adjust the measuring nozzle position.
"Nozzle at limit position"	Warns that the Z motor position has reached the nozzle limit. Set the safety stopper again.
"TOO CLOSE"	Warns that the measuring head is too close to the patient's eye. Move the machine as far from the patient's eye.
"TOO FAR"	Warns that the measuring head is too far from the patient's eye. Move the machine as close to the patient's eye.
"Please check the DATE/TIME"	Displayed when the battery for the built-in clock becomes run down. <ul style="list-style-type: none"> - When the battery consumed, confirm the difference in time and adjust it. - When the battery becomes completely drained, to verify whether time stopping occurred and call your service engineer.
"Cannot detect x position. Please turn the switch off/on."	Displayed when the auto alignment sensor and the machine are not correctly connected or not connected at all. Turn off the main power switch, turn it on again. When this message is displayed repeatedly, even if you turn the switch on again, please call your service engineer.
"Cannot detect y position. Please turn the switch off/on."	Displayed when the auto alignment sensor and the machine are not correctly connected or not connected at all. Turn off the main power switch, turn it on again. When this message is displayed repeatedly, even if you turn the switch on again, please call your service engineer.
"Cannot detect z position. Please turn the switch off/on."	Displayed when the auto alignment sensor and the machine are not correctly connected or not connected at all. Turn off the main power switch, turn it on again. When this message is displayed repeatedly, even if you turn the switch on again, please call your service engineer.
"Chinrest Error"	Displayed when the chinrest is not correctly connected with the main body or not connected at all. Turn off the main power switch, turn it on again. When this message is displayed repeatedly, even if you turn the switch on again, please call your service engineer.
"Perform air check?" or Turn off the unit?	Whether to perform air check or to move the chinrest and measurement head to their last positions can be selected. Choose one from "Air Check", "Turn off" and "CANCEL".
"Air checked. Press OK to continue."	Displayed when normal air check operation is confirmed. Press the OK button.
"Confirm abnormal action(-) of air check"	Displayed when an anomaly occurred during air check. Check the measuring nozzle for any foreign matter.


"Confirm abnormal action(+) of air check"	Displayed when an anomaly occurred during air check. Check the measuring nozzle for any foreign matter.
"Range of Input value is 2 - 10"	Warns when the measurement count is set out of the setting range. Set it within the input range.
"Please wait until packing mode is finished..."	Indicates that the packing operation is in process. Wait until it is completed.
"Packing mode is finished.Please turn off the device."	Indicates that the packing operation is completed. Switch off the machine.
"First Octet is 1 - 223 Range"	Displayed when the first octet of IP address, default gateway, primary DNS server or secondary DNS server is set to a value out of the specified input range. Enter a value within the input range.
"Value is irregular. Input valid value"	Displayed when the octet is set to a value out of the specified input range. Enter a value within the input range.
"The IP address is 0 - 255 Range"	Displayed when the subnet mask is set to a value off the input rule. Enter a value within the input rule.
"At least 3 characters are required for operator ID prefix."	Displayed when the input examiner ID prefix is less than 3 characters. Enter a prefix with 3 characters.
"Incorrect password"	Displayed when the password inputted to select a special mode is incorrect.
"Please don't place the face on the chinrest, to prepare for next measurement."	The measuring head shall move to the "stand by mode" position of the initial setting. Therefore confirm that the patient don't place one's face on the chinrest, then press the OK button.
"This will clear all user settings. Reset to the factory settings?"	When "Factory data reset" is executed, it displays as confirmation. When "OK" is chosen, reset is executed. When "CANCEL" is chosen, reset is canceled.

AIR CHECK

If a problem is suspected, do the air check.

If the result is "abnormal action(+)" or "abnormal action(-)," call your dealer or TOPCON at the address printed on the back cover of this manual. For details about the air check, see "AIR CHECK" on page 40.

TROUBLE-SHOOTING OPERATIONS

	WARNING	To avoid electrical shock, do not open the instrument. All service should be performed by a qualified service engineer.
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If a problem is suspected, use the following check list.

If following the instructions does not improve the condition, or if your problem is not included in the list, contact your dealer or TOPCON at the address on the back cover.

CHECK LIST

Trouble	Condition	Check	Page
Control panel does not turn on.	—————	Is power cord unplugged?	32
		Is power cord connected to the instrument?	32
	Fuse blows when the power switch is turned on.	Call our service engineer.	130
Control panel is not clear.	The image is dark.	Confirm the brightness by "Control panel brightness."	86
A malfunction is found in a movable part.	—————	Do not move it forcibly. Instead, call a service engineer.	38
Printing is not done.	Paper comes out without printing.	Confirm the direction of the paper roll. If the direction is incorrect, reset the paper to the proper direction.	34
	Paper does not come out.	If "PAPER END" displayed on the control panel, replenish the printer paper.	34

SPECIFICATIONS AND PERFORMANCE

SPECIFICATIONS AND PERFORMANCE

CT-1P

Ocular pressure measurement	Measuring range: 1 to 60mmHg (Display unit: 1mmHg step display, Average value:1mmHg/0.1mmHg step display) Measuring range: 1 to 30mmHg step display (switchable to 1 to 60mmHg step display)
Cornea thickness measurement	Measuring range: 0.4 to 0.75mm (Display unit: 0.001mm step display)
External I/O terminal	USB(for Import), RS-232C(for Export), LAN(for Export)

CT-1

Ocular pressure measurement	Measuring range: 1 to 60mmHg (Display unit: 1mmHg step display, Average value:1mmHg/0.1mmHg step display) Measuring range: 1 to 30mmHg step display (switchable to 1 to 60mmHg step display)
External I/O terminal	USB(for Import), RS-232C(for Export), LAN(for Export)

SPECIFICATIONS OF THE PERSONAL COMPUTER (COMMERCIAL PRODUCT) TO BE CONNECTED

PERSONAL COMPUTER

OS	Microsoft Windows 10 Pro 64bit (Japanese/English)
CPU	Core i5 8365U to 1.9GHz or faster
Memory sizes	8GByte or more
HDD	256GByte or more
Web browser (when using social distancing operation)	Google Chrome 84.0.4147.135~
Network	LAN (main unit and connection side) : Compatible with 100 Base-TX Wi-Fi : IEEE 802.11 ac or faster

SPECIFICATIONS OF WIRELESS DEVICE TO BE CONNECTED

Wireless router / access point

Wireless LAN standard	IEEE 802.11 ac*
EMS standard	IEC / EN 61000-4-3
EMI standard	CISPR32 Class B or VCCI Class B

* The standards of the wireless devices to be connected must be compatible. If the standard is different, a wireless connection cannot be established.

Computer terminal

Platform	Tablet PC
OS	iOS 13 or later
Web browser	Google Chrome 84.0.4147.135~

SPECIFICATIONS OF THE CONNECTED WEBCAM

Resolution	HD 720P or higher
Interface	USB 2.0 or higher

GENERAL INFORMATION ON USAGE AND MAINTENANCE

INTENDED PATIENT POPULATION

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

- Fix the face to the chinrest, forehead rest.
- Keep the eye open.
- Understand and follow instructions when undergoing an examination.

INTENDED USER PROFILE

Since the COMPUTERIZED TONOMETER CT-1P/CT-1 is a medical device, the operation should be supervised by a physician.

ENVIRONMENTAL CONDITIONS FOR USE

Temperature:	+10°C to +40°C
Humidity:	30% to 90% RH (without condensation)
Pressure:	800hPa to 1060hPa

STORAGE, USAGE PERIOD

1. Environmental conditions (without package)
 - *Temperature : 10°C to 40°C
 - Humidity : 10% to 95% (without dew condensation)
 - Pressure : 700hPa to 1060hPa
 - * **THIS INSTRUMENT DOES NOT MEET THE TEMPERATURE REQUIREMENTS OF ISO 15004-1 FOR STORAGE. DO NOT STORE THIS INSTRUMENT IN CONDITIONS WHERE THE TEMPERATURE MAY RISE ABOVE 40°C OR FALL BELOW 10°C.**
2. When storing the instrument, ensure that the following conditions are met:
 - (1) The instrument must not be splashed with water.
 - (2) Store the instrument away from environments where pressure, temperature, humidity, ventilation, sunlight, dust, salty/sulfurous air, etc. could cause damage.
 - (3) Do not store or transport the instrument on a slanted or uneven surface or in an area where it is subject to vibrations or instability.
 - (4) Do not store the instrument where chemicals are stored or gas is generated.
3. Normal life span of the instrument:
 - 8 years from delivery providing regular maintenance is performed [TOPCON data]

ENVIRONMENTAL CONDITIONS FOR PACKAGING IN STORAGE

(Product in its normal transport and storage container as provided by manufacturer)

Temperature	: -20°C to +50°C
Humidity	: 10% to 95%
Pressure	: 700hPa to 1060hPa

ENVIRONMENTAL CONDITIONS FOR PACKAGING IN TRANSPORTATION

(Product in its normal transport and storage container as provided by manufacturer)

Temperature: : -40°C to +70°C
Humidity: : 10% to 95%
Pressure : 700hPa to 1060hPa

ELECTRIC RATING

Source voltage :AC100-240V
Frequency :50-60Hz
Power input :75VA

DIMENSIONS AND WEIGHT

Dimensions: 286~326mm(W) × 445~526mm(D) × 466~615mm(H)
Weight : 19.5kg

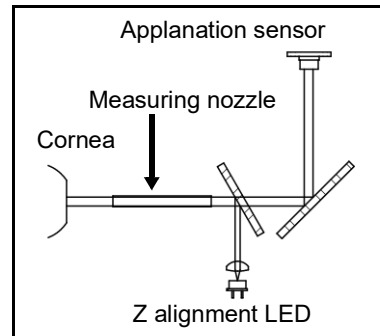
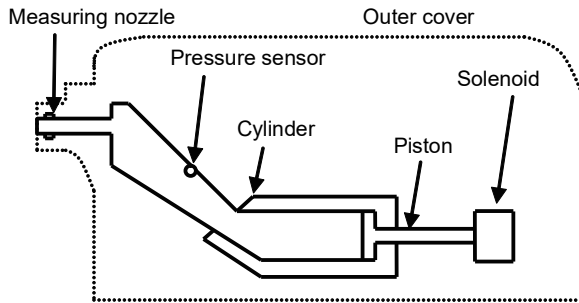
SAFETY DESIGNATIONS PER IEC 60601-1 STANDARD

- Type of protection against electric shocks: Class I
The Class I equipment provides means to connect itself to the protective grounding system of utilities to thereby independently provide protection against electric shocks by keeping connectable metal components nonconductive in case of a failure in the basic insulation.
- Degree of protection against electric shocks: B type applied component
The B type applied component provides the specified degree of protection against electric shocks with regard to the reliability particularly of leak current, patient measuring current and protective utility connection (in case of Class I equipment).
- Degree of protection against harmful intrusion of water (IEC 60529): IPX0
This product does not provide protection against intrusion of water.
(The degree of protection against harmful ingress of water defined in IEC 60529 is IPX0)
- Classification by sterilization/disinfection method specified by manufacturer
This product does not have a component requiring sterilization/disinfection.
- Classification by safety of use in air/flammable anesthetic gas, oxygen or nitrous oxide/flammable anesthetic gas atmosphere
 - Equipment not suited for use in air/flammable anesthetic gas, oxygen or nitrous oxide/flammable anesthetic gas atmosphere
 - This product should be used in an environment free of flammable anesthetic gas and other flammable gases.
- Classification by operation mode
Continuous operation refers to an operation under normal load conditions, within the specified temperature and without limitations on the operating time.

OPERATION PRINCIPLES

Ocular Pressure Measurement:

By ejecting air from the measuring nozzle to the cornea, detect by a pressure sensor the internal cylinder pressure required for the cornea to reach a prescribed deformed state (with a certain plane area), and calculate the ocular pressure value by computing. Irradiating the cornea by near infrared light using a Z alignment LED, receive the reflected beam by an applanation sensor and detect the cornea reaching a prescribed deformed state (with a certain plane area).



Cornea Thickness Measurement (only in CT-1P):

The slit light is projected onto the patient eye at a slant, and the corneal thickness is measured in reflected light from the corneal surface and corneal endothelium.

Auto Mode:

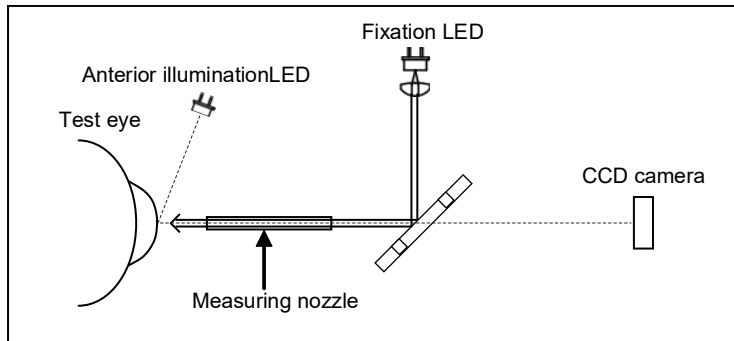
By illuminating the cornea using an XY alignment LED and a Z alignment LED, compute the reflected cornea image information received by the CCD camera unit and detect positions of the cornea and instrument. Based on the detected information, drive the X-axis drive motor, Y-axis drive motor and z-axis drive motor and move the main body to a position suitable for measurement. Detect that the main body is placed at a position suitable for measurement, measure the ocular pressure.

After finishing the measurement one eye, the main body, running the previously set distance, moves to the other eye, and starts detecting the positions of the cornea and instrument.

*In the case of manual mode, operations of main body movement and ocular pressure measurement are done by tapping the buttons displayed as software on the control panel.

Observation and Fixation Target Projection:

Illuminating the test eye by near infrared light using an anterior illumination LED, display the image received by the CCD camera unit on the control panel. Provide a visible light by a fixation LED, and the patient/examinee looks it as a fixation target through the measuring nozzle.






CHECKPOINTS FOR MAINTENANCE

1. Regularly maintain and check the equipment and parts.
2. When resuming the use after a long period of storage, verify that the instrument operates correctly and safely.
3. To ensure the correct reading, do not mar the measuring window with finger prints, dust, etc.
4. If the measuring window is soiled, clean it following the "CLEANING THE NOZZLE AND THE GLASS INSIDE THE MEASURING NOZZLE" instructions on page 126.

DISPOSAL

When disposing of the instrument and/or parts, follow local regulations for disposal and recycling.

 NOTE	 This symbol is applicable for EU member countries only. To avoid potential damage to the environment and possibly human health, this instrument should be disposed of (i) for EU member countries - in accordance with WEEE (Directive on Waste Electrical and Electronic Equipment), or (ii) for all other countries, in accordance with local disposal and recycling laws.
	This Product contains a coin cell. You cannot replace batteries by yourself. When you need to replace and/or dispose batteries, contact your dealer or TOPCON listed on the back cover.
	 EU Battery Directive This symbol is applicable for EU members states only. Battery users must not dispose of batteries as unsorted general waste, but treat properly. If a chemical symbol is printed beneath the symbol shown above, this chemical symbol means that the battery or accumulator contains a heavy metal at a certain concentration. This will be indicated as follows: Hg: mercury(0.0005%), Cd: cadmium(0.002%), Pb: lead(0.004%) These ingredients may be seriously hazardous to human and the global environment.

ELECTROMAGNETIC COMPATIBILITY

This product conforms to the EMC standard IEC60601-1-2:2014(Ed.4.0).

The expected electromagnetic environment for the whole life cycle is home medical treatment environment.

- a) MEDICAL ELECTRICAL EQUIPMENT needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the ACCOMPANYING DOCUMENTS.
- b) Portable and mobile RF communications equipment can affect MEDICAL ELECTRICAL EQUIPMENT.
- c) The use of ACCESSORIES, transducers and cables other than those specified, with the exception of transducers and cables sold by the manufacturer of the EQUIPMENT or SYSTEM as replacement parts for internal components, may result in increased EMISSIONS or decreased IMMUNITY of the EQUIPMENT or SYSTEM.
- d) The EQUIPMENT or SYSTEM should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the EQUIPMENT or SYSTEM should be observed to verify normal operation in the configuration in which it will be used.
- e) The use of the ACCESSORY, transducer or cable with EQUIPMENT and SYSTEMS other than those specified may result in increased EMISSION or decreased IMMUNITY of the EQUIPMENT or SYSTEM.
- f) Do not use the devices generating electromagnetic waves within 30cm from all the parts of the instrument and system. Those devices may have influence on this instrument.

Item	Length (m)	Shielded	Ferrite Core
AC Power cord (AC 100/120V)	1.5	No	No
AC Power cord (AC 230/240V)	3.0	No	No
AC Power cord for PC	1.8	No	No
AC Power cord for Monitor	1.8	No	No
USB cable	1.5	Yes	No
LAN cable	3.0	Yes	Yes
Serial cable	5.0	Yes	No
Keyboard cable	1.8	No	No
Mouse cable	1.8	No	No
HDMI/DVI conversion cable	0.1	Yes	No
DVI cable	1.8	Yes	Yes
Barcode Scanner	-	-	-
Personal Computer	-	-	-
LCD Monitor	-	-	-
Keyboard	-	-	-
Mouse	-	-	-

Guidance and manufacturer's declaration - electromagnetic emissions

The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below. The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The CT-1P/CT-1 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The CT-1P/CT-1 is suitable for use in all establishments including domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC61000-3-3	Complies	

Guidance and manufacturer's declaration - electromagnetic immunity

The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below.
The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 15 kV air	± 8 kV contact ± 15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines Repetition frequency 100kHz	± 2 kV for power supply lines ± 1 kV for input/output lines Repetition frequency 100kHz	Main power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Main power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and Voltage variations on power supply input lines IEC 61000-4-11	0% U_T for 0.5 cycle (with phase angle 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°) 0% U_T for 1 cycle 0° 70% U_T for 25/30 cycles 0° 0% U_T for 250/300 cycles	0% U_T for 0.5 cycle (with phase angle 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°) 0% U_T for 1 cycle 0° 70% U_T for 25/30 cycles 0° 0% U_T for 250/300 cycles	Main power quality should be that of a typical commercial or hospital environment. If the user of the CT-1P/CT-1 requires continued operation during main power interruptions, it is recommended that the CT-1P/CT-1 be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE U_T is the a.c. main voltage prior to application of the test level.

Guidance and manufacturer's declaration - electromagnetic immunity

The CT-1P/CT-1 is intended for use in the electromagnetic environment specified below. The customer or the user of the CT-1P/CT-1 should assure that it is used in such an environment.

Immunity test	IEC 60601-1-2:2014 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150kHz to 80MHz 6Vrms Within ISM band and amateur radio band of 150kHz to 80MHz 10V/m 80MHz to 2.7GHz Proximity electromagnetic field from radio communication equipment ^{a)}	3 Vrms 150kHz to 80MHz 6Vrms Within ISM band and amateur radio band of 150kHz to 80MHz 10V/m 80MHz to 2.7GHz Proximity electromagnetic field from radio communication equipment ^{a)}	Portable and mobile RF communications equipment should be used no closer to any part of the CT-1P/CT-1, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \frac{6}{E} \sqrt{P}$ where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer, d is the recommended separation distance in meters (m), and E is the radiation electromagnetic field level in volt/ meter (V/m).

NOTE These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

a) The table below shows the proximity electromagnetic field from radio communication equipment.

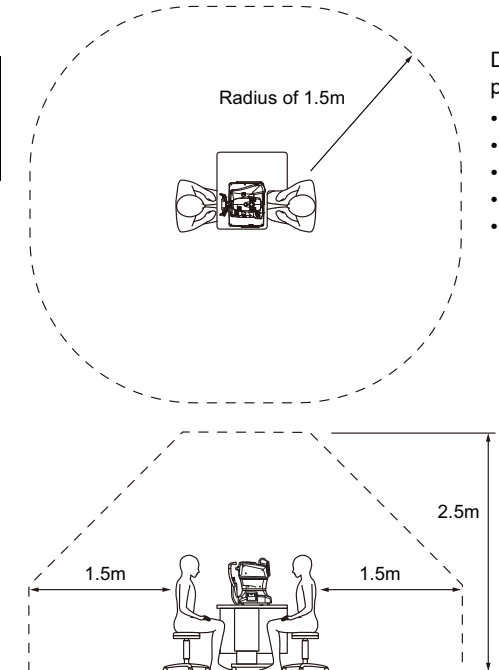
Test frequency [MHz]	Band [MHz]	Equipment	Modulation	Maximum output (W)	Distance (m)	Immunity test value [V/m]
385	380-390	TETRA 400	Pulse modulation 18Hz	1.8	0.3	27
450	430-470	GMRS 460 FRS 460	FM ±5kHz 1kHz sine	2	0.3	28
710	704-787	LTE Band 13, 17	Pulse modulation 217Hz	0.2	0.3	9
745						
780						
810						
870	800-960	GSM 800/900 TETRA 800 iDEN820 CDMA850 LTE Band 5	Pulse modulation 18Hz	2	0.3	28
930						
1720						
1845	1700-1990	GSM 1800 CDMA1900 GSM 1900 DECT LTE Band 1,3,4,25 UMTS	Pulse modulation 217Hz	2	0.3	28
1970						
2450	2400-2570	Bluetooth WLAN 802.11 b/g/n RFID 2450 LTE Band7	Pulse modulation 217Hz	2	0.3	28
5240	5100-5800	WLAN 802.11 a/n	Pulse modulation 217Hz	0.2	0.3	9
5500						
5785						

PATIENT'S ENVIRONMENT

When the patient or inspector may touch the devices (including the connecting devices) or when the patient or inspector may touch the person that comes into contact with the devices (including the connecting devices), the patient's environment is shown below.

In the patient's environment, use the device conforming to IEC60601-1. If you are compelled to use any device not conforming to IEC60601-1, use an insulation transformer.

Do not use the power strip in the patient's environment. Connect the power supply of the device to the commercial power supply.



Devices applicable to the patient's environment



- Personal computer (Note1)(Note 2)
- Monitor display for PC (Note 1)
- Insulation transformer (Note 3)
- Barcode reader (Note 1)
- WEBCAM (Note 1)

Note 1: Use the personal computer conforming to IEC 62368-1.

Note 2: Do not remove the cover from the personal computer.

Note 3: Use the insulation transformer conforming to IEC 60601-1.

Note 4: The Tablet PC used for remote connection is used for operation from outside the patient environment.

 WARNING	<p>Connect only items that have been specified as part of the ME system or that have been specified as being compatible with the ME system.</p>
 CAUTION	<ul style="list-style-type: none"> • Do not connect an additional power strip or an extension cord to the system. • The total 1kVA is the maximum allowable load of the auxiliary power supply socket for the insulation transformer, which is provided for the system. Do not connect the device exceeding this capacity. • Use the auxiliary power supply socket of the insulation transformer to power only a device that will be a component of the system. • It is dangerous to connect any device which is not used as a component of the system, to the insulation transformer. • When the insulation transformer is not used, the personal computer and the monitor for the personal computer must be installed out of the patient's environment.


REQUIREMENTS FOR THE EXTERNAL DEVICE

The external device connected to the analog and digital interfaces must comply with the respective IEC or ISO standards (e.g. IEC62368-1 for data processing equipment and IEC 60601-1 for medical equipment).

Anybody connecting additional equipment to medical electrical equipment configures a medical system and is therefore responsible that the system complies with the requirements for medical electrical systems. Attention is drawn to the fact that local laws take priority over the above mentioned requirements.

If in doubt, contact your dealer or TOPCON (see the back cover).

IT NETWORK ENVIRONMENT

 CAUTION	When connected with an IT network, ensure the appropriate and sufficient security to prevent the infection with malware and a computer virus, the leak of information, etc. [There is a risk of data leakage]
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- CT-1P/CT-1 can be connected with personal computer (PC), output the measurement data by operating the main unit. And the unit can be controlled via the network, and patient information and device information can be output with using PC.
- An external personal computer (PC) is connected with the Tablet PC via a Wi-Fi router in order to input measurement data.
- Refer to the figure below for the characteristics, configuration, technical specification, intended information flow and route when connected with an IT network.
- When connected with an IT network, ensure the appropriate and sufficient security to prevent the infection with a computer virus, the leak of information, etc.
- • When any failure occurs in IT systems, some troubles may be caused by it.
 - Poor connection (USB) may cause a failure of software update. There is a risk that the device cannot be used if update is failed.
 - Poor connection (LAN/RS-232C/Wi-Fi) may cause a failure of output of measured data, patient information and device information. There is a risk of data loss.
 - Poor connection (USB) may cause a failure of input of patient information with barcode reader. There is a risk that an examination with wrong patient information is done.
- When connected with an IT network with which a device other than CT-1P/CT-1 is connected, the patient, the operator or the third party may suffer unexpected and unacceptable risks. Before using CT-1P/CT-1, it is recommended to identify, analyze, evaluate and manage these risks.
- When the IT network has been changed after the connection, a new risk may occur. So an additional analysis is necessary.
- The change of IT network includes the following items:
 - Change in the IT network configuration;
 - Connection of additional items to IT network;
 - Removal of items from IT network;
 - Update of the device connected with IT network;
 - Upgrade of the device connected with IT network.

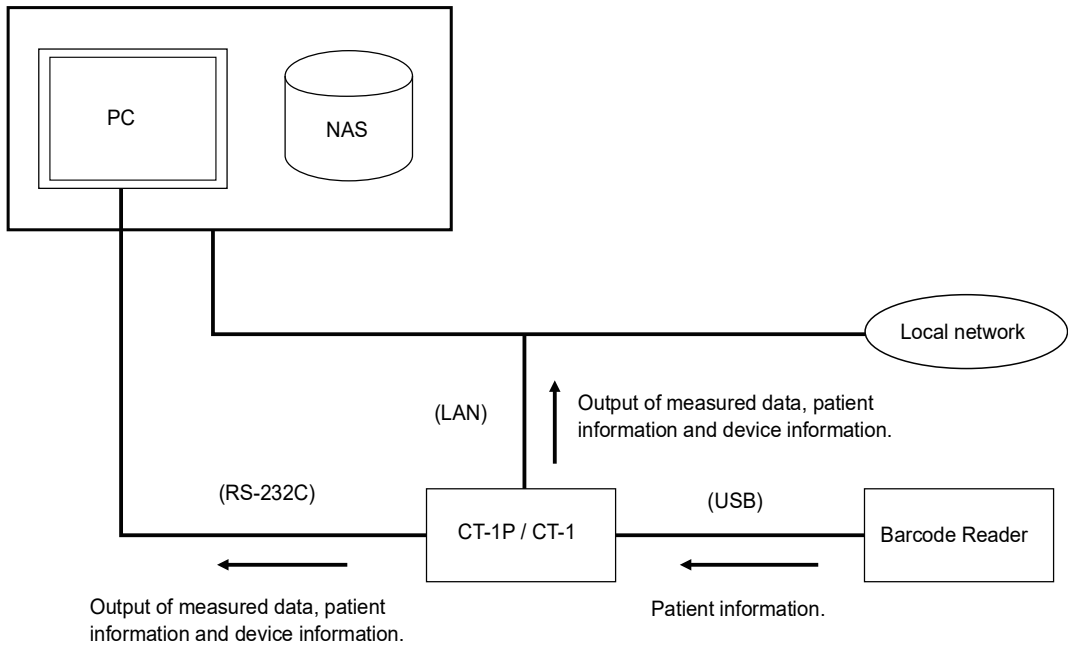
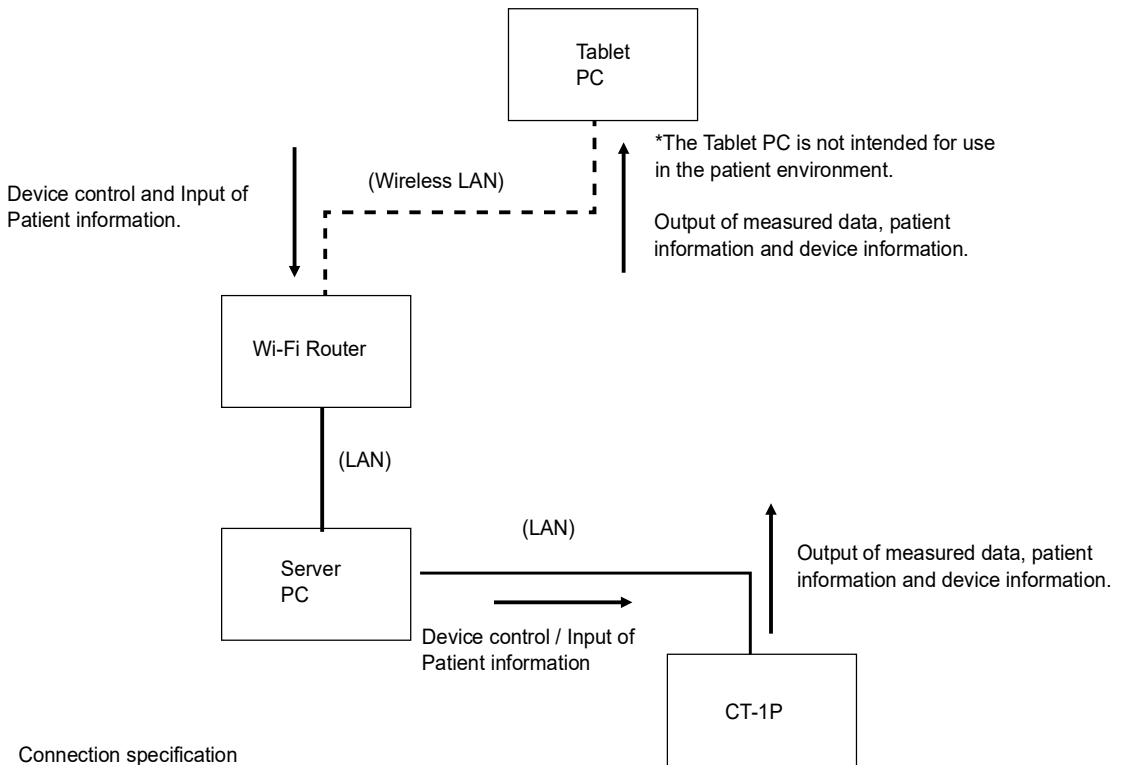


Fig. A : Configuration of a typical IT network connection

PC supports not only wired connection but also wireless connection configuration as Fig.B below.



Connection specification
- Wired LAN connection : 100Base-TX

Fig. B : Configuration of IT network wireless connection

For remote operation

- Remote operation means that the operator operates CT-1P from a location remote from the CT-1P main unit and the patient.
- Refer to Fig.C below for characteristics, configuration, technical specifications, intended information flow and route when connected with IT network.

Preparation for remote operation

- Place the support staff member near the patient to support the inspection.
- Prepare the support device for voice communication between the support staff member and the operator.
- Install the online conferencing software for voice communication during the inspection on the operating device used by the operator and the support device used by the support staff member.

Operation Flow

- 1) Support staff member should connect their support device to the facility network and launch the online conferencing software.
- 2) The examiner should connect the control device to the facility network and launch the operating software and online conference software.
- 3) Before the inspection, make sure that the operator, support staff member, and the patient can communicate via voice through the online conferencing software.
- 4) The operator should start the inspection after confirming that the patient and the support staff member are near the main unit.
- 5) The support staff member should monitor the patient and the main unit during the inspection so that the patient can perform the inspection properly.

Cautions for remote operation

- When connecting to an IT network, check the precautions described on the previous page.
- When the operator uses CT-1P from outside the facility, the control device should be connected to the facility network via VPN or other means to ensure security.
- If voice communication cannot be established due to communication failure, etc., wait until communication is restored or interrupt the inspection.
- Support staff member should always stay close by the patient and the main unit so that the operator can give appropriate instructions to the patient and support staff member can directly check the condition of the patient and the main unit.
- The location of the main unit, the operator, and the data storage device should be in the same country or in a region where the same laws and regulations apply.

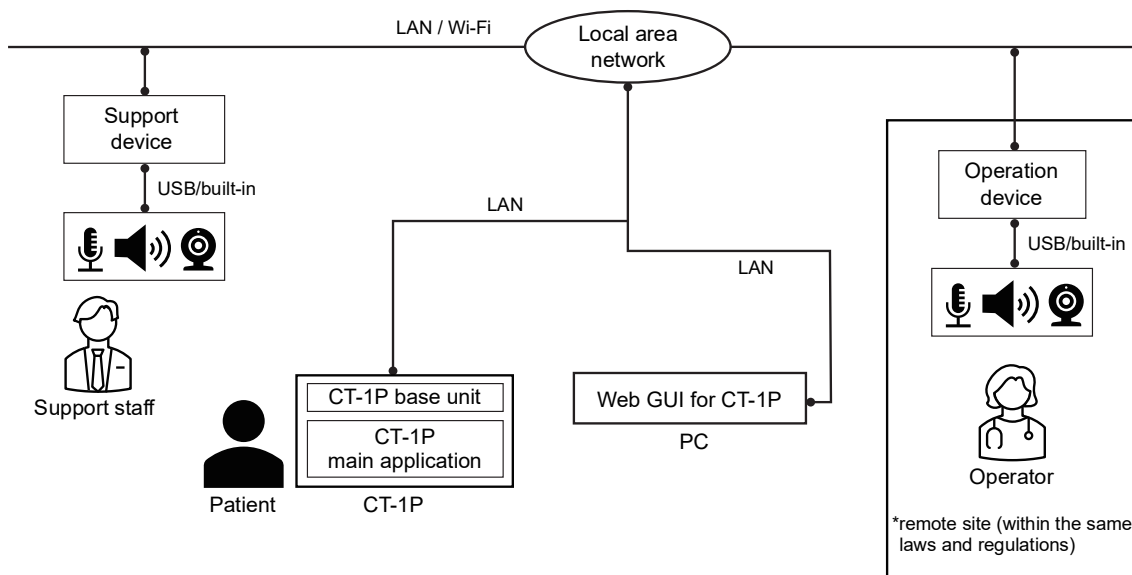


Fig. C: Configuration of IT network connection for remote control

REFERENCE MATERIAL

USABLE EXTERNAL DEVICE

Please use the following parts when using external devices and connection cables.

- Communication cable (Topcon made)
Product name: RS-232C 5m
Product name code: 418460002
- LAN cable (commercially available)
Category 7e shielded type 3 m
- Barcode reader (commercially available)
USB 2.0 compatible type cable 1.5m
- WEBCAM (commercially available)
USB 2.0 compatible

* For usable external devices and connection cables, please contact your local distributor or contact address on the back cover. When using accessories other than recommended products, there is a possibility of affecting the operation of this product. Please be aware that we cannot guarantee the trouble when using accessories other than recommended items.

SHAPE OF PLUG

Country	Voltage/frequency	Shape of plug
Mexico	110V/50Hz	Type C&E
Argentina	220V/60Hz	Type A
Peru	220V/60Hz	Type A
Venezuela	110V/50Hz	Type C&E
Bolivia & Paraguay	220V/60Hz	Type A (Most common) Type H (Infrequently)
Chile	220V/60Hz	Type A
Colombia	110V/50Hz	Type C
Brazil	220V/60Hz 127V/60Hz	Type A Type C
Ecuador	110V/50Hz	Type C&E
United States	120V/60Hz	Type A (Hospital Grade)
Canada	120V/60Hz	Type A (Hospital Grade)

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COMPUTERIZED TONOMETER CT-1P
COMPUTERIZED TONOMETER CT-1

USER MANUAL

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