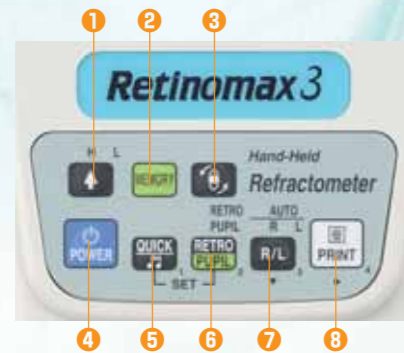# Stylish, streamlined designs and bright colors
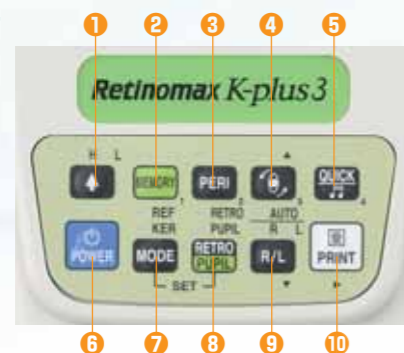
**Hand Held Ref
Retinomax 3**

Operation panel (main body)
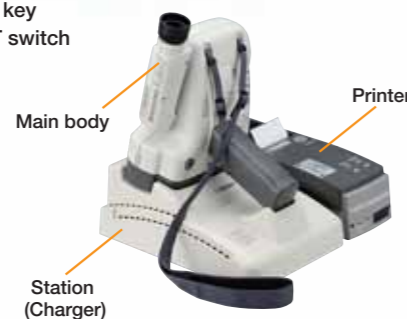❶ Fixation intensity key
❷ MEMORY key
❸ Axis rotation key
❹ POWER key
❺ QUICK/Melody key
❻ RETRO mode/Pupil size key
❼ R/L(right/left) select key
❽ PRINT key
❾ START switch

**Handheld Autorefract Keratometer
Retinomax K-plus 3**

Operation panel (main body)
❶ Fixation intensity key
❷ MEMORY key
❸ PERI key (cornea peripheral measurement)
❹ Axis rotation key
❺ QUICK/Melody key
❻ POWER key
❼ MODE key
❽ RETRO mode/Pupil size key
❾ R/L(right/left) select key
❿ PRINT key
⓫ START switch

Main body

Printer

Station
(Charger)

Outstanding functionality in keeping with past Retinomax Series models
• The angle of the viewfinder can be adjusted within a range of 0˚ to 135˚, making measurement easy regardless of patient's position or posture.

• A cylinder axis correction function with a 45˚ angle facilitates the use of the Retinomax on patients lying down.

• The 50-mm working distance is the same as that of the table-top model.
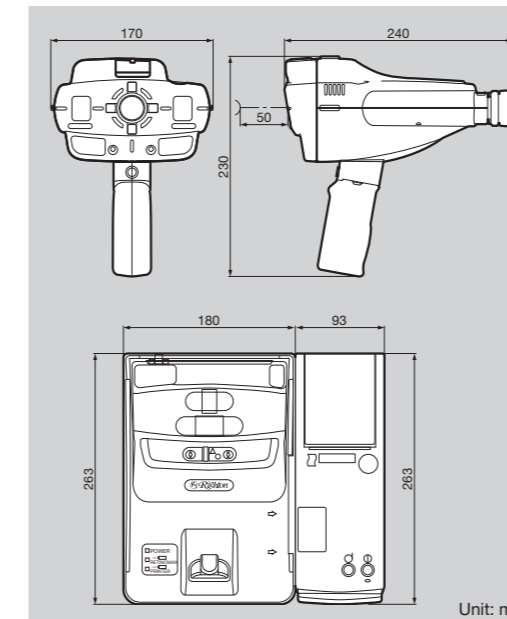• The melody function provides a more relaxed atmosphere for children.

• Wireless data transfer from the main body to a printer is possible within a range of 8.7 meters directly and 6 meters at an angle of 30˚.

Optional accessories

Hard carry case

Soft carry case

Spare battery

PV/PC interface cable

Printer cable
(main body + printer)

DC cord

Dimensions

Unit: mm

Specifications

Hand Held Ref Retinomax 3		
Refractometry		
Measurement range	Spherical (S + C)	-18.00D to +23.00D (in 0.25D increment)
	Cylinder	0 to +12D or 0 to -12D (in 0.25D increment)
	Cylinder axis	1 to 180˚ (in 1˚ increment)
Minimum pupil size		ø2.3 mm (Auto Quick)
Vertex distance		0, 12 mm adjustable
Measurement time		0.14 sec. per indication (continuous)
Pupil size measurement time		+0.27 sec./1 time
Measurement mode		Auto/Continuous/Auto Quick/Quick
IOL wearing eye		Automatic support
Fixation target		Picture target
Battery life		Approx. 80 minutes (fully charged)
Eyepiece		4.05 x 3.02 mm LCD
Working distance		50 mm
Reaching distance		278 mm
External output		Infrared (Printer, Remote Vision)
		RS-232C (Main body—PC, Printer—PC, Main body—Monitor)
Dimensions (main body only)		170(W) x 230(H) x 240(D) mm
Weight		Approx. 969 g (with battery) (Battery: Approx. 100 g)

Station	
Dimensions	185(W) x 102(H) x 263(D) mm
Weight	Approx. 1.36 kg
Power consumption	100 VA

Printer	
Interface	RS-232C
Dimensions	93(W) x 77(H) x 263(D) mm
Weight	Approx. 595 g (without battery)

Handheld Autorefract Keratometer Retinomax K-plus 3		
Refractometry		
Measurement range	Spherical (S + C)	-18.00D to +23.00D (in 0.25D increment)
	Cylinder	0 to +12D or 0 to -12D (in 0.25D increment)
	Cylinder axis	1 to 180˚ (in 1˚ increment)
Minimum pupil size		ø2.3 mm (Auto Quick)
Vertex distance		0, 12 mm adjustable
Measurement of radius of curvature		
Measurement range	Radius of curvature	5.00 to 11.00 mm (in 0.01 mm increment)
	Corneal astigmatism	In 0.25D increment
	Cylinder axis	1 to 180˚ (in 1˚ increment)
	Center	ø3.2 mm (R8 mm)
	Peripheral	ø6.8 mm (R8 mm) (25˚ vertical/horizontal)
Measurement time	Kerato and Refract (continuous)	0.34 sec. per indication (continuous)
	Kerato alone	0.2 sec. per indication (continuous)
	Refract alone	0.14 sec. per indication (continuous), 0.07 sec. (Quick)
Pupil size measurement time		+0.27 sec./1 time
Measurement mode		Auto/Continuous/Auto Quick/Quick
IOL wearing eye		Automatic support
Fixation target		Picture target
Battery life		Approx. 80 minutes (fully charged, at 25˚C)
Eyepiece diopter adjustable range		±8D
Working distance		50 mm
Reaching distance		278 mm
External output		Infrared (Printer, Remote Vision)
		RS-232C (Main body–PC, Printer–PC, Main body–Monitor)
Dimensions (main body only)		170(W) x 230(H) x 240(D) mm
Weight		Approx. 999 g (with battery) (Battery alone: Approx. 100 g)

Retinomax Series 3 meets CE (EMC, GM), UL, FDA and RoHS standards.

⚠ **WARNING:** To ensure correct usage, read all manuals carefully before using equipment

ISO 9001
ISO 9001 Certified
RIGHT MFG. CO., LTD.

Printed in Japan (0708-02)TI

Righton

Handheld
Retinomax Series 3

Hand Held Ref
Retinomax 3

Handheld Autorefract Keratometer
Retinomax K-plus 3

New — Much lighter and has a thinner grip

Weighing just under one kilogram, the main body with battery is over 17% lighter in the case of the K-plus 3 and 11% lighter in the case of the Retinomax 3 than conventional Retinomax Series models.

The thinner grip makes it easier to hold

Retinomax 3
Retinomax 2

Retinomax   Conventional Retinomax Series
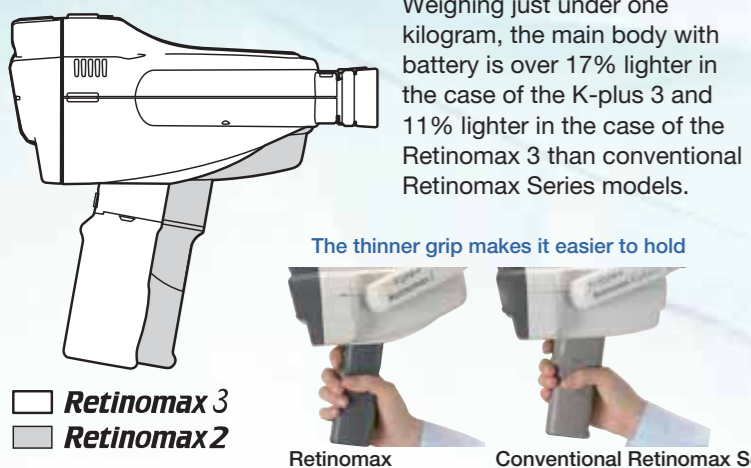
Retinomax 3
Main body (with battery): 969 g
Down 11.1% from the conventional model (1,080 g)
Retinomax K-plus 3
Main body (with battery): 999 g
Down 17.5% from the previous model (1,200 g)
The girth of the grip (upper part): 145 mm
Down 11.5% from the previous model (175 mm)

The Retinomax Series 3's center of gravity is in the grip, making the Retinomax Series 3 feel much lighter than it actually is.

The center of gravity is in the grip.

New — Auto pupil measurement, display and printout

The unit measures pupil size automatically, displays the X (horizontal) size on the monitor, and prints out the XY (horizontal and vertical) sizes separately. These results can be used for reference for checking accommodation, mydriasis, ADIE and Horner-associated syndrome, etc. The user can choose to print out either all the data or representative values only.

Representative values only   Whole values

Pupil size displayed on the monitor

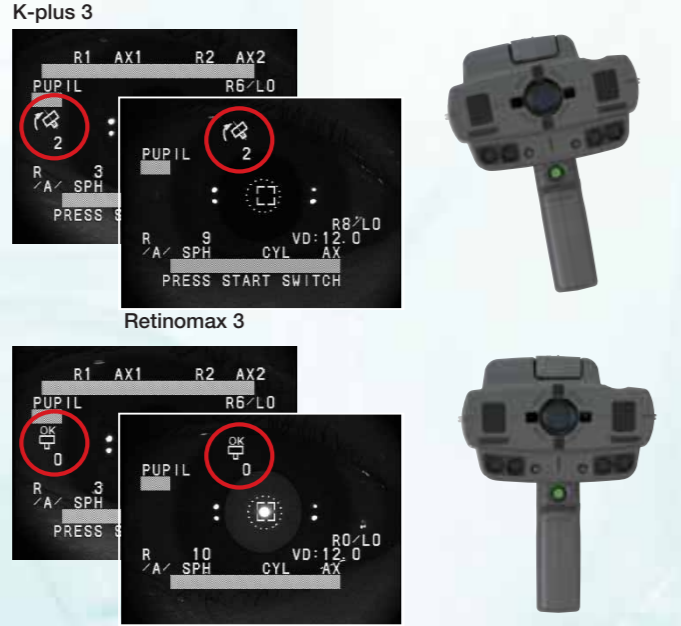Some data does not show pupil size due to eyelash obstruction or unstable instrument position.

New — Auto Quick measurement

If no measurement is made within six seconds, the unit automatically enters Quick mode. Measurement is then taken in 0.07 second. In Auto Quick mode, "AQ" appears on printouts.

New — Parallel sensor detects inclination of main body and displays value

Unlike conventional methods, in which operators guess levelness, levelness can be detected digitally with the use of the unit's parallel sensor. Levelness is displayed on the monitor in every 2° pitch up to ±12°, and every 3° pitch up to ±45°. (This is only displayed in the standing position. No levelness display appears when the patient is lying down.)

K-plus 3

Retinomax 3

New — Alignment indicator display

Indicators showing alignment directions are displayed on the monitor to facilitate alignment. The Mire ring makes focusing much easier.

Alignment indicator

Mire ring

New — Two memory functions

❶ Data from the last measurement is automatically saved after the Retinomax 3 is turned off. The last patient data can be recalled by pressing the PRINT key. The data can be transferred wirelessly to a printer.

❷ Press the MEMORY key for more than one second to enter Memory Set. Here you can save the data of up to 50 patients (100 eyes) in 10, 20, 30- and 40-patient steps. Data can also be printed out with Memory Set. For measurements, first press the MEMORY key to enter Memory mode. After each measurement, press PRINT to save individual patient data. This avoids the possibility of single-eye readings being mixed up. In normal readings, numbers are assigned in series. However, in Memory mode, saved data is numbered from "1."
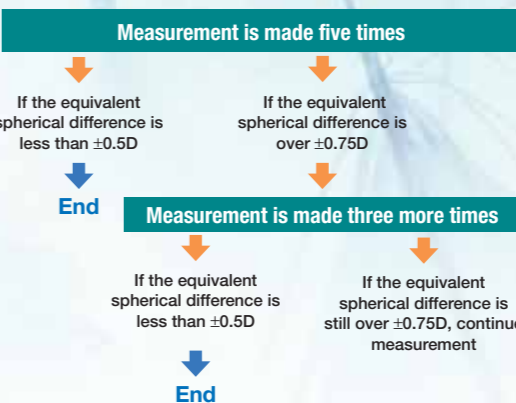
Up to 50 sets of patient data can be saved or printed out. To delete saved data, select the DELETE ALL on the Memory Set screen.

To print out multiple sets of data, use the provided printer cable (main body to printer) to transfer data to the printer.

New — Achieving long and continuous use

With the adoption of a lithium ion battery, continuous operational time has been extended to approximately 80 minutes. The station has an AC adapter, allowing it to be connected to the main body with a DC cord (optional) to enable extended continuous operation. This facilitates screening, as well as use in an operating room.

DC cord: 2.9 m (length), 4 mm (diameter)

Optional DC cord connects main body and station

New — Fixation intensity is automatically lowered for pupils less than 3 mm in size

The minimum pupil measurement size in Auto Quick mode is 2.3 mm. If a pupil is less than 3.0 mm, the fixation target intensity is automatically reduced by approximately 45% to avoid pupil contraction. The intensity can also be reduced with the fixation intensity key.

New — Extended diopter adjustment range

The diopter adjustment range has been extended to ±8D.

New — Accuracy and stability have been improved

Measurement is made five times

If the equivalent spherical difference is less than ±0.5D → **End**

If the equivalent spherical difference is over ±0.75D →

Measurement is made three more times

If the equivalent spherical difference is less than ±0.5D →

If the equivalent spherical difference is still over ±0.75D, continue measurement

End

New — Three fixation targets are available.

Specify when ordering.

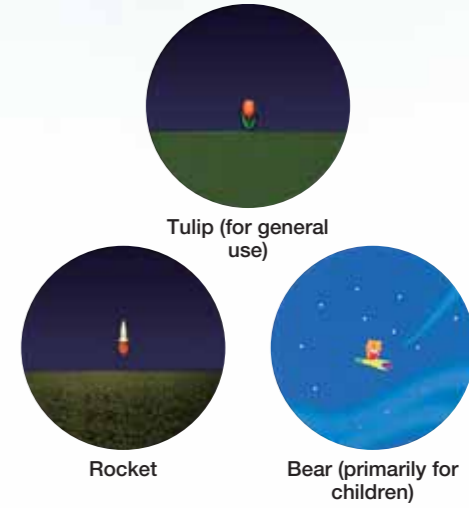Tulip (for general use)

Rocket

Bear (primarily for children)

New — Quick startup and fast printout

The main body takes only four seconds to start after power is turned on (some 60% faster than conventional models). Printout time has been reduced by 45%.

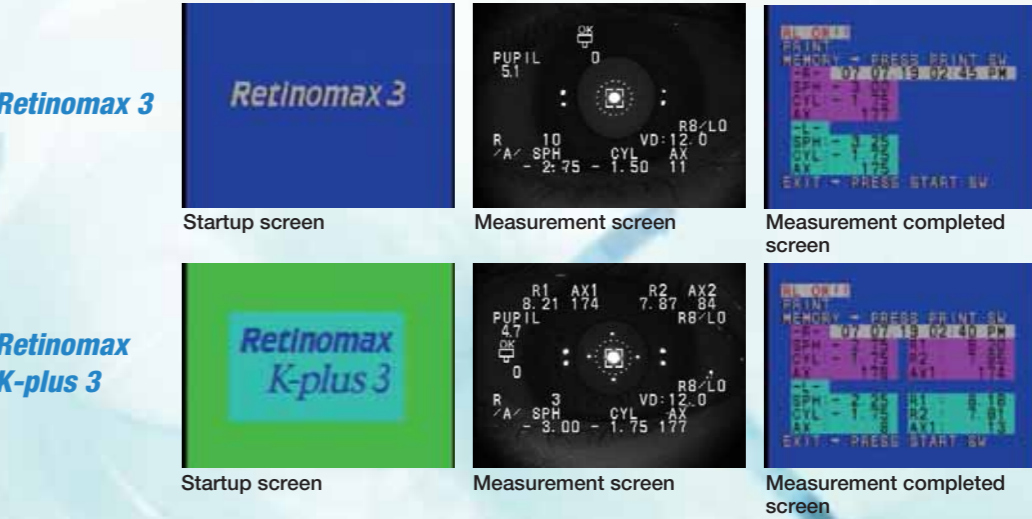## New — Retinomax 3 also has retro illumination mode

The Retinomax 3 includes the retro illumination mode for observation of the inside of the pupil. Accordingly, the only major difference between the Retinomax 3 and the Retinomax K-plus 3 is the adoption of kerato functions (including peripheral kerato readings).

In retro illumination mode

Retinomax 3

Startup screen   Measurement screen   Measurement completed screen

Retinomax K-plus 3

Startup screen   Measurement screen   Measurement completed screen

Pupil size: One
Ref data: All
Kerato data: Representative values
Eye diagram: ON

Order can be changed to either Right Ref & Kerato or Left Ref & Kerato