NIDEK

Handheld Ref/Keratometer **HandyRef-K**

Handheld Refractometer **HandyRef**

THE ART OF EYE CARE

A valued assistant
that is always at hand

Wouldn't you want to be able to take an accurate measurement anytime and anywhere?
NIDEK's HandyRef-K/HandyRef provides the solution.
You can achieve an excellent measurement with this compact body design with one hand.
The HandyRef-K/HandyRef will come in "HANDY" as a reliable partner that you can always
count on.

Measurement Method and
Measurement Mode

Anytime-anywhere
Handheld Measurement

Excellence of
Advanced Functions

Improved Usability by
Innovative Functionality

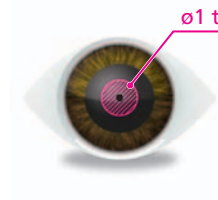Enhanced Interface

High Measurement Accuracy

Measurement Method
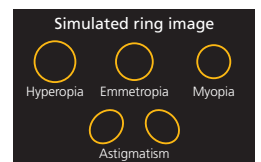
Pupil Zone Imaging Method

The HandyRef-K/HandyRef analyzes a wide area (Max. 4 mm diameter) pupil zone. By measuring the light coming through the pupil zone in a wide area, more accurate measurement data closer to the subjective refraction is now possible. Small pupil (Min. 2 mm diameter) can also be measured.

Super Luminescent Diode (SLD) and Highly Sensitive CCD

Super luminescent diode (SLD) light source provides a sharper and better defined ring image compared to the conventional LED. The highly sensitive CCD camera detects the image even if the fundus reflection is weak.

ø1 to 4 mm area

RING

Simulated ring image

Hyperopia   Emmetropia   Myopia

Astigmatism

SynchroScan Technology

The HandyRef-K/HandyRef adopted an excellent measurement method; "SynchroScan Technology". Measurements start when the alignment starts, and locks in the data when alignment becomes optimal as a measurement value. It provides a more stable measurement value more effectively and efficiently.

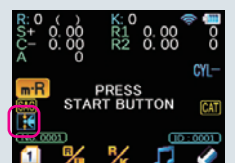## Excellence of Advanced Functions

Full Graphic LCD with 3.5-inch Color Screen

The full graphic 3.5-inch color LCD is 40% larger than the previous model. Clear screen design and intuitive icons similar to the ARK-1/AR-1 series provide high user-friendliness.
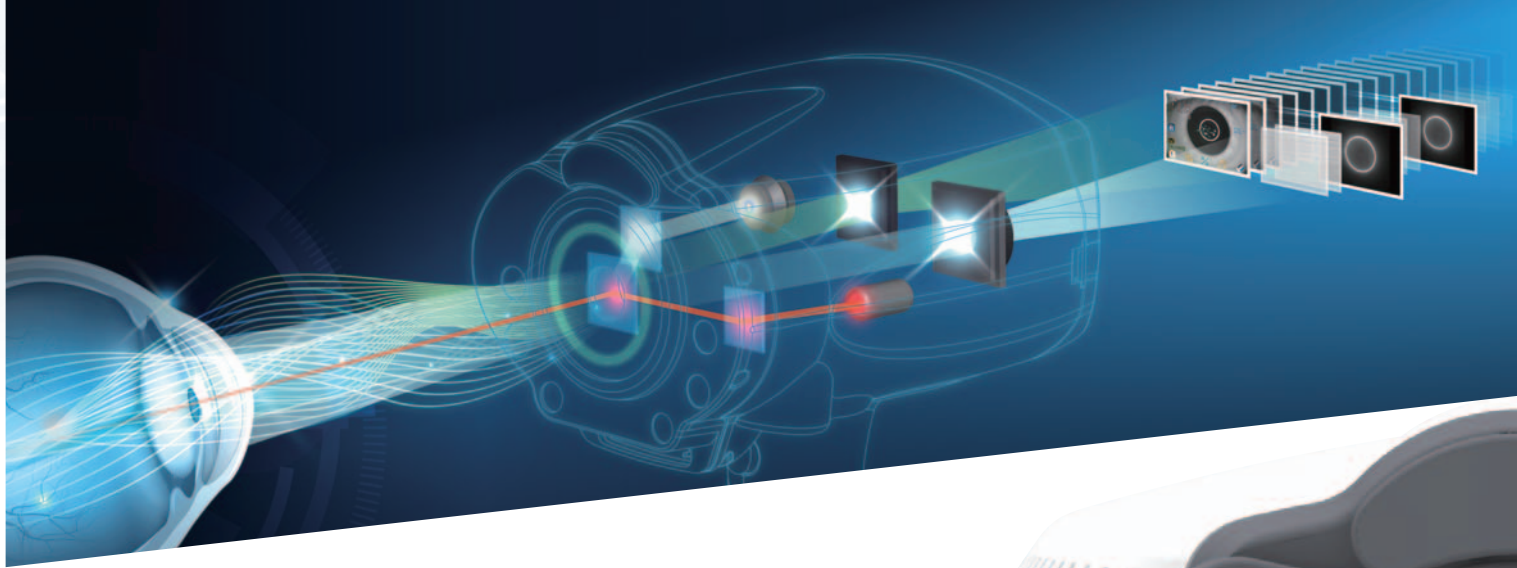
Supine Position Mode

By tilting the instrument 60° or more downward, it enters supine position mode automatically. When measuring from patient's side, the cylinder axis is compensated by 90° before display.

Focusing Indicator

By detecting the distance between the instrument and patient's eye, the alignment guide mark is displayed on the screen to facilitate smooth measurement.

Too far   Too close   Optimum condition

Auto Shot

Measurement Mode

Auto Shot Mode

When the alignment/focusing becomes optimal, the HandyRef-K/HandyRef gets the measurement data automatically. If unstable data is included, additional measurement automatically starts.

Cataract Measurement Mode

If appropriate data cannot be obtained by standard measurement, it enters the cataract measurement mode automatically to harvest the data more easily.

Quick Measurement Mode

The quick measurement mode provides faster and simpler measurement for patients who have difficulty in alignment. By relaxing the measurement range, children or patients whose eye movement is not stable can still be measured smoothly.

Additional Measurement Mode

If the measurement data obtained by auto shot is not reliable, additional measurement will automatically be performed by additional measurement (AM) mode.

Axis Correction Function

The sensor detects the inclination of the instrument to display the automatically corrected axis.*

*When the axis correction parameter is set to "YES"

Pupil Size Measurement

Pupil size measurement is performed automatically during AR measurement. By changing the parameter setting, the pupil size can also be manually measured.
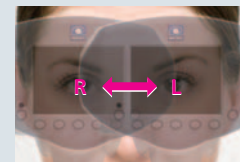
Retroillumination Image Observation

Retroillumination image enables the observation of any opacity within the optical media. The last capture image can be saved.

R/L Auto Detection

Patient's right/left eye can be detected automatically and R or L icon will be displayed on the screen.

RL Sensor

Keratometry Measurement with Mire Ring (available for the HandyRef-K)

The HandyRef-K measures keratometry with mire ring, reducing interference from eyelids.

Contact Lens Measurement Function* (available for the HandyRef-K)

Curvature of contact lenses can be measured with the provided contact lens holder.
*Soft contact lenses cannot be measured.

Convenient Portability

Anytime-anywhere Handheld Measurement

Lightweight Compact Design

The HandyRef-K/HandyRef is lightweight and also has excellent weight distribution. Its compact design makes it easy to hold, balance, and use. Intelligently designed button layout is also useful in one-handed operation.

Removable Magnetic Occluders

Removable magnetic occluders cover unmeasured eye to enable the other eye to fixate on the target.

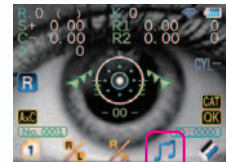## Improved Usability by Innovative Functionality

Memory Data Management

The measurement data of 50 patients (100 eyes) can be saved in the main body memory.

Melody Function

For inexperienced patients like children, the melody function can be of help. It can ease patient's anxiety and draw attention.

Summary Screen

Various measurement values can be displayed together on the summary screen. Operator can visualize and appreciate the whole picture of each patient's eye condition at a glance.

Printer Function
(available for the printer-equipped model)

Auto cutter function is included. By using IR or wireless LAN (WLAN) connection, measurement data can be printed even if the main body and station are separated.

Easier Usability through Optional Accessories

Carrying Case

Three types of carrying case are available, a case including the portable stand, one only for the main body and station, and one only for the portable stand.

Type 1: Carrying case for HandyRef series with portable stand
Type 2: Carrying case for HandyRef series
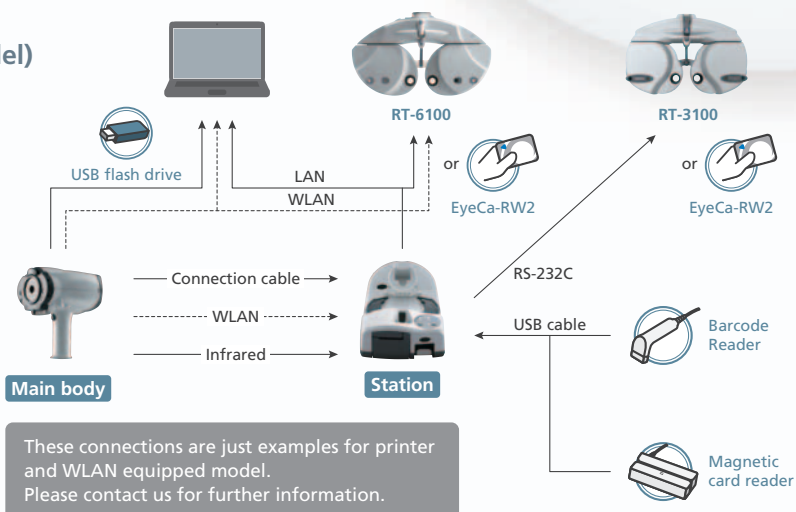Type 3: Carrying case for portable stand

Enhanced Interface

Connection with NIDEK RT
(available for the printer-equipped model)

LAN/WLAN, RS232C cable and EyeCa-RW2 (Eye Care card) provide quick and easy data transfer from the HandyRef-K/HandyRef to RT*.

*The specifications for data transfer differ according to RT.

Connection with PC

Measurement data transfer to a PC through LAN/WLAN or USB flash drive is possible.

USB flash drive

RT-6100

RT-3100

LAN
WLAN

or
EyeCa-RW2

or
EyeCa-RW2

RS-232C

Connection cable
WLAN
Infrared

Main body

Station

USB cable

Barcode Reader

Magnetic card reader

These connections are just examples for printer and WLAN equipped model.
Please contact us for further information.

Selectable Model Types

With the various models available, the HandyRef-K/HandyRef will satisfy every user's needs. Two types of fixation target are available (scenery or children's).*
*This is factory setting: Not able to change the fixation target type later.

Type	A		B		C		D	
Printer	✓	✓			✓	✓		
WLAN for Main Body	✓	✓	✓	✓				
WLAN for Station	✓	✓						
Fixation Target	Scenery	Children's	Scenery	Children's	Scenery	Children's	Scenery	Children's

Please contact us for further information.

Portable Stand

By using the portable stand, the HandyRef-K/HandyRef can be used as a desktop device. It prevents hand tremor and makes more accurate measurement possible.

HandyRef-K/HandyRef Specifications

Main body		
Auto refractometer		
Measurement range	Sphere -20.00 to +20.00 D (VD = 12 mm) (0.12/0.25 D increments)	
	Cylinder 0 to ±12.00 D (0.12/0.25 D increments)	
	Axis 0 to 180° (1°/5° increments)	
Minimum measurable pupil diameter	ø2 mm	
Auto keratometer*1		
Measurement range	Curvature radius 5.00 to 13.00 mm (0.01 mm increments)	
	Refractive power 25.96 to 67.50 D (0.12/0.25 D increments)	
	Cylindrical power 0 to ±12.00 D (0.12/0.25 D increments)	
	Axis 0 to 180° (1°/5° increments)	
Sagittal measurement	25° each from the center (superior side, inferior side, temporal side, nasal side)	
Pupil size measurement range	1.0 to 10.0 mm (0.1 mm increments)	
Fixation Target	Scenery or children's	
Display	3.5-inch color LCD	
Interface	USB: 1 port	
	Wireless LAN (WLAN): 1ch (WLAN-equipped model only)*2	
Power Specification		
Battery pack	Lithium-ion battery (7.2 V 1800 mAh)	
Station feed	DC 9 V 2 A (maximum)	
Dimensions/Mass	206 (W) × 181 (D) × 224 (H) mm (including occluders) / 998 g (including battery pack)	
	8.1 (W) x 7.1 (D) x 8.8 (H)" (including occluders) / 2.2 lbs. (including battery pack)	
Station		
Printer	Thermal line printer with easy loading and auto cutter (printer-equipped model only)	
Interface	USB: 1 port, LAN: 1 port, RS-232C: 1 port (printer-equipped model only)	
Battery charging		
Battery pack	Lithium-ion battery (7.2 V 1800 mAh)	
Charging time	When inserted in the main body: Approx. 180 min. (when the main body is placed on the station)	
	When inserted in the battery slot: Approx. 140 min.	
Power supply	AC 100 to 240 V, 50/60 Hz	
Power consumption	60 VA	
Dimensions/Mass	224 (W) x 283 (D) x 147 (H) mm / 2.7 kg (printer-equipped model), 2.5 kg (model without printer)	
	8.8 (W) x 11.1 (D) x 5.8 (H)" / 5.9 lbs. (printer-equipped model), 5.5 lbs. (model without printer)	
Standard accessories	Occluder, Neck strap, Printer paper (printer-equipped model only), Power cord, Connection cable, Battery pack, Dust cover, Spherical model eye, Contact lens holder*1	
Optional accessories	Carrying case for HandyRef series with portable stand, Carrying case for HandyRef series, Carrying case for portable stand, Barcode scanner, Magnetic card reader, EyeCa-RW2, Eye Care card, Communication cable, Battery pack, USB flash drive	

*1 Only for the HandyRef-K
*2 Only for the countries (regions) certified by the Radio Law

Product/Model name: HANDHELD REF/KERATOMETER HandyRef-K
HANDHELD REFRACTOMETER HandyRef
Brochure and listed features of the device are intended for non-US practitioners.
Specifications may vary depending on circumstances in each country.
Specifications and design are subject to change without notice.

Eye & Health Care
NIDEK CO., LTD.