



Handheld Ref/Keratometer / Handheld Refractometer
HandyRef-K / 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 new 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.



SynchroScan Technology

The HandyRef-K / HandyRef adopted an excellent new 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

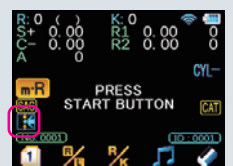
Full Graphic LCD with 3.5-inch Color Screen

New 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.



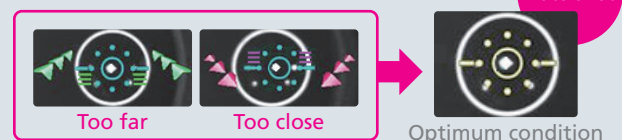
Supine Position Mode

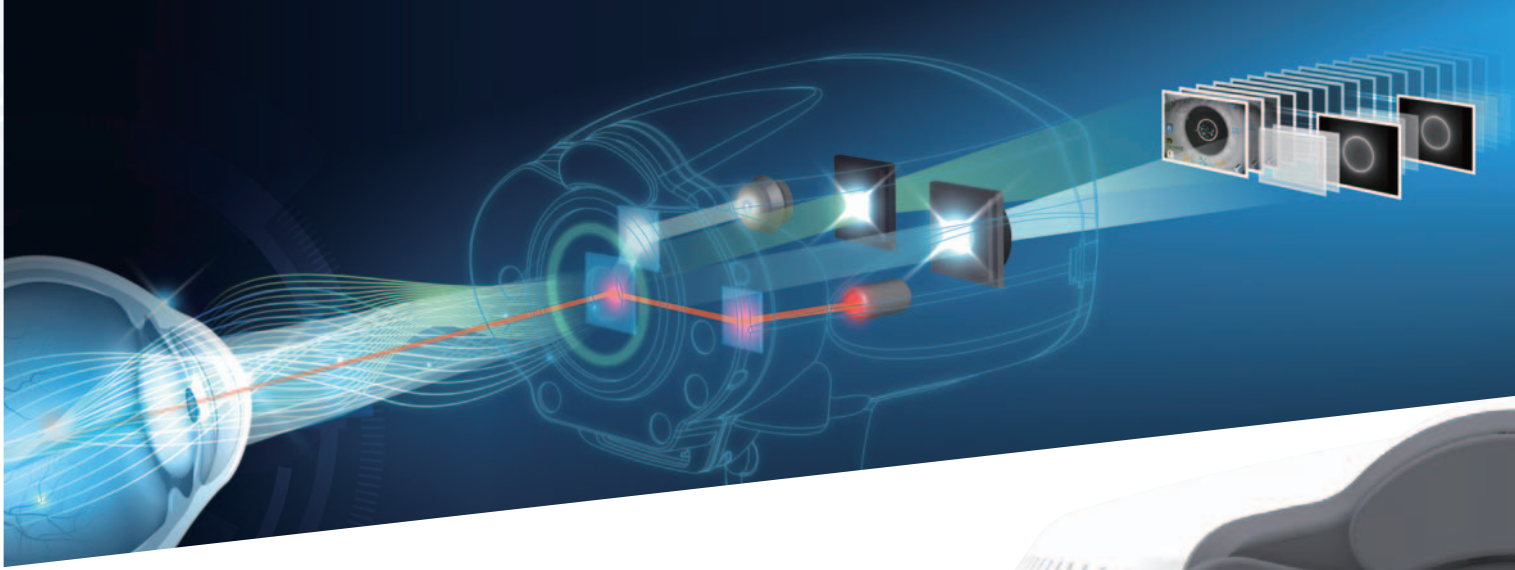
By tilting the instrument 60° or more downward, it enters supine position mode automatically. When measuring from patient's side, the cylinder axis is compensated by 90°, and is displayed.



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.





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

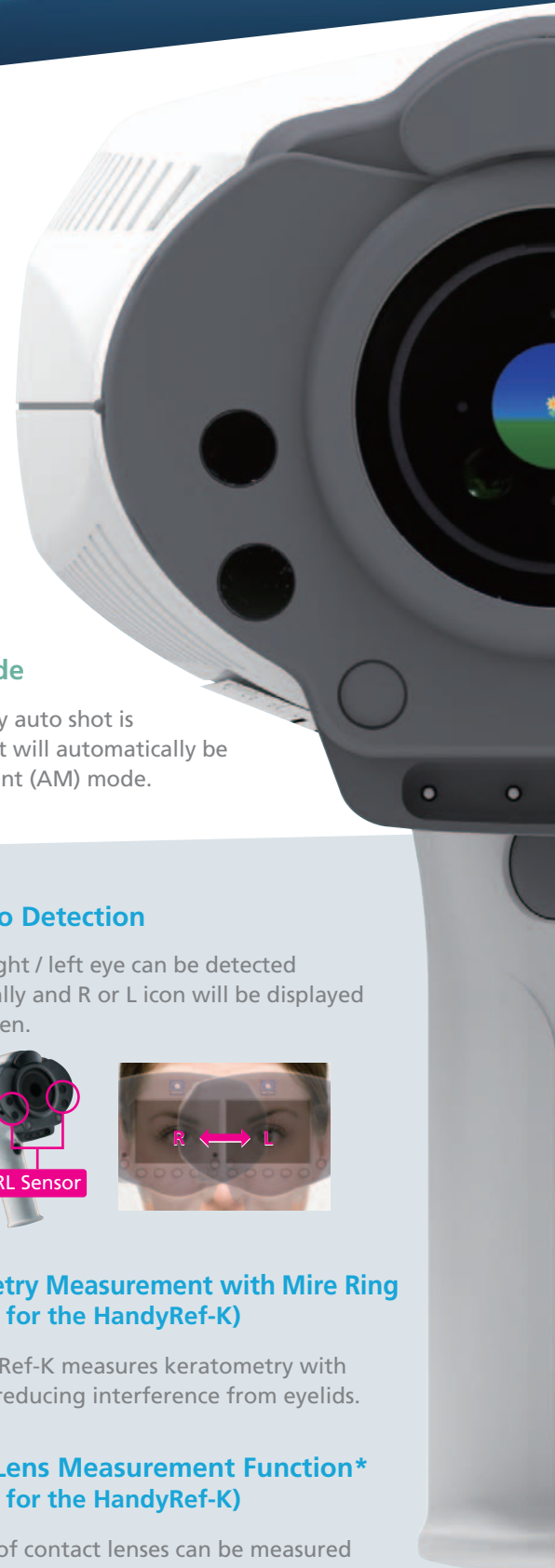
If appropriate data cannot be obtained by standard measurement, it enters the cataract measurement mode automatically to harvest the data more easily.

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

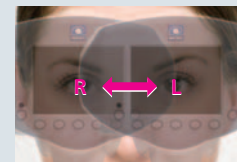
The sensor detects the inclination of the instrument to display the automatically corrected axis.*



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

R / L Auto Detection

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



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.



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

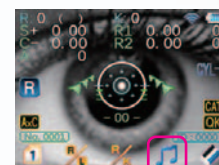
The measurement data of 50 patients (100 eyes) can be saved in the main body memory.

DATE	TIME	NO.	(R)S
JUN/10/2014	07:40	0004	-5.00
JUN/10/2014	07:40	0003	+0.00
JUN/10/2014	07:38	0002	+0.00
JUN/10/2014	07:38	0001	-4.50

ID	(R)S	(L)S
	-3.75	-0.25

Melody Function

For inexperienced patients like children, newly added 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.

AR	SC	LA	PS	KM	R1	R2
5.00	0.00	0.00	5.0	7.98	0	90

AR	SC	LA	PS	KM	R1	R2
4.75	0.00	0.00	5.0	7.99	0	90

SUMMARY

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

Carrying Case

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



Enhanced Interface

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

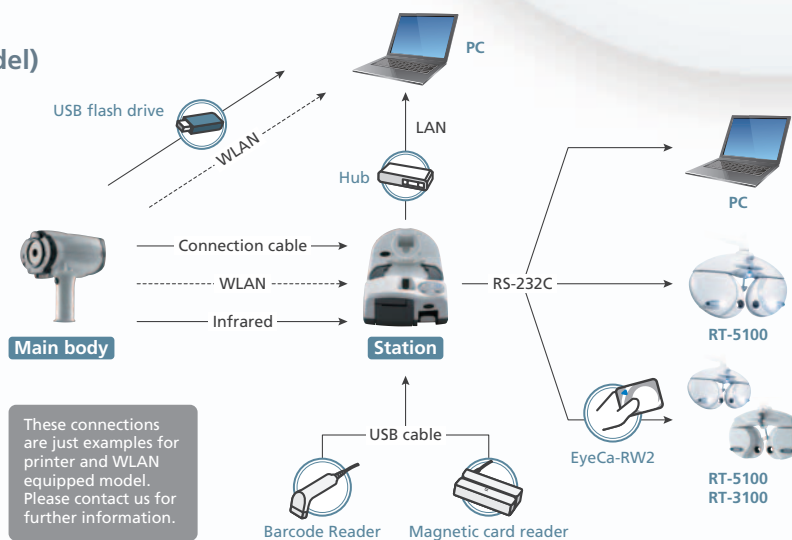
RS232C cable and EyeCa-RW2 (Eye Care card)* provide quick and easy data transfer from the HandyRef-K / HandyRef to RT.

*RS232C cable is only for RT-5100.

Connection with PC*

Measurement data transfer to PC through wireless LAN (WLAN), LAN cable (by station) and infrared connection is possible.

*Available communication methods differ according to the type.



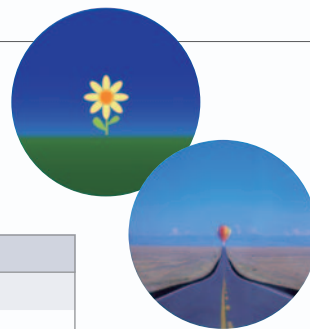
Selectable Model Types

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.



through Available Options



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 = 12mm) (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 (Wireless LAN (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) x 181 (D) x 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 (2 units), Neck strap, Printer paper (3 rolls / printer-equipped model only), Power cord, Connection cable, Battery pack, Dust cover, Spherical model eye, Contact lens holder*1
Optional accessories	Carrying case, Carrying case with 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 Limited to the USA, Canada, and other countries that implement the RE Directive.

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.



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