ARK-F/AR-F Specifications

Auto refractometer	
Measurement range	Sphere -30.00 to +25.00 D (VD = 12 mm) (0.01/0.12/0.25 D increments)
	Cylinder 0 to ±12.00 D (0.01/0.12/0.25 D increments)
	Axis 0 to 180° (1°/5° increments)
Minimum measurable pupil diameter	ø2 mm
Auto keratometer*	
Measurement range	Curvature radius 5.00 to 13.00 mm (0.01 mm increments)
	Refractive power 25.96 to 67.50 D (n = 1.3375) (0.01/0.12/0.25 D increments)
	Cylindrical power 0 to ±12.00 D (0.01/0.12/0.25 D increments)
	Axis 0 to 180° (1°/5° increments)
Sagittal measurement	25° each from the center (superior side, inferior side, temporal side, nasal side)
Vision comparison	Available with scenery chart
Retro illumination image	Available
Accommodation measurement range	0 to 10.00 D (0.01 / 0.12 / 0.25 D increments)
Pupillary distance measurement range	30 to 85 mm (1 mm increments) (Near point PD: 28 to 80 mm at WD = 40 cm)
Corneal size measurement range	10.0 to 14.0 mm (0.1 mm increments)
Pupil size measurement range	1.0 to 10.0 mm (0.1 mm increments)
Auto tracking	Fully automatic 3D tracking(X-Y-Z directions)
Auto shot	Available
Auto measurement	Start automatically after eye detection
Auto transition from right to left eye measurement	Available
Power supply	AC 100 to 240 V, 50/60 Hz
Power consumption	100 VA
Dimensions/Mass	305 (W) x 492 (D) x 488 (H) mm / 20 kg
	12.0 (W) x 19.4 (D) x 19.2 (H)" / 44 lbs.
Standard accessories	Printer paper, Power cord, Dust cover, Chinrest paper, Fixing pins for chinrest paper,
	Spherical model eye with integrated contact lens holder
Optional accessories	Communication cable (RS-232C), Barcode scanner, Magnetic card reader,
	Hand-held control (wired or wireless type), Tablet control software

* Not available for the AR-F

Auto Ref/Keratometer / Auto Refractometer
ARK-F/AR-F

Product/Model name: AUTO REF/KERATOMETER ARK-F
AUTO REFRACTOMETER AR-F
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.
Bluetooth is registered trademarks of Bluetooth SIG, Inc.
The tablet described in this brochure is not included or sold with the ARK-F/AR-F.

Eye & Health Care
NIDEK CO., LTD.

THE ART OF EYE CARE

ARK-F/AR-F_B01E001

More comfortable, more seamless for anyone

Reliably accurate eye examination equipment with comfortable operability has become worldwide standard.
It is used every day; that's why NIDEK stands behind it with complete dedication and professionalism.
Our ARK-F/AR-F impressively changes your "standard" with its smooth, fully-automatic and precise
measurement and high freedom of installation, in addition to the conventional accurate measurement.

Advanced operation

Remarkably easy workflow through fully-automatic measurement

Simply by placing the chin on the chinrest, NIDEK eye detection camera automatically detects the position of the eyes and measurement starts without pressing any button. Gentle voice guidance facilitates smooth measurement for any operator.

No direct operation required

1 "Measurement starting. Please keep your hands away from the device"

2 "Please open your eyes wide."

3 "Measurement finished."

A patient places chin on the chinrest. The device automatically detects the position of the eyes and eye level.

The measuring unit automatically moves to the measuring position with the screen changing to the patient's eye image and measurement starts. The device then moves to the opposite eye and repeats the procedure.
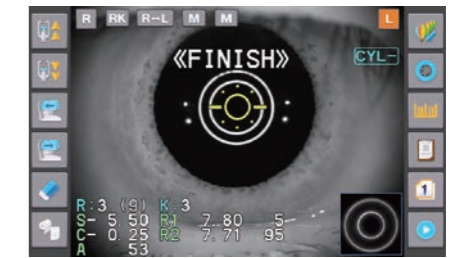
When measured values for the left and right eyes are obtained, measurement ends.

Selectable and intuitive manual operation

Manual measurement using the large, durable 7.0-inch touch screen is also possible with the ARK-F/AR-F. Alignment is easily achieved by simply long-pressing a position on the screen and an icon. Clearly identifiable icons assure intuitive operation. Moreover, a newly designed hand-held control and tablet control software are available as options that increase operator freedom and productivity.
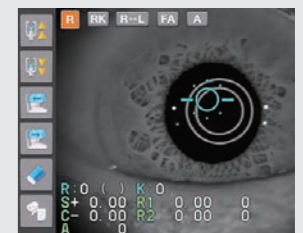
Optional accessories

■ Hand-held control (wired/wireless)
Ergonomically designed palm-fit controller offers an all-new handling experience. Simple and well-organized button layout provides excellent single-handed operation. It can be stored in a dedicated holder which can be attached to either side of the ARK-F/AR-F.

Wireless type of hand-held control

■ Tablet control software
When using a tablet as a controller, the screen of the ARK-F/AR-F is duplicated on the tablet screen. It is even possible to measure with the same accuracy and comfort from a remote location.
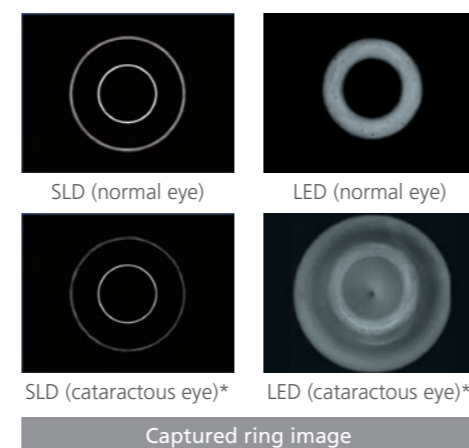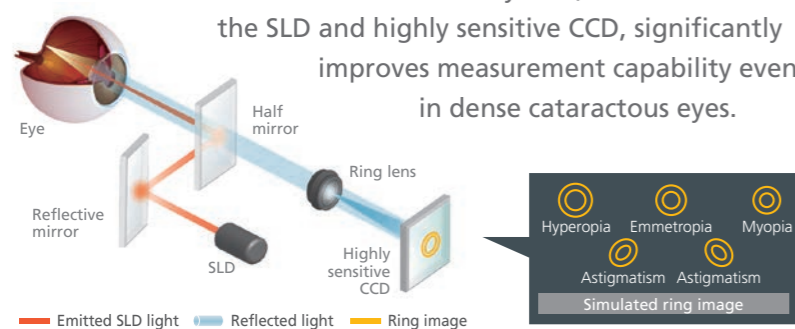
Accurate measurement

Large pupil zone imaging method

The large pupil zone imaging method enables the measurement of wider area refraction up to 6 mm diameter and can indicate the difference between the wide area refraction and central area refraction of up to 3.5 mm diameter. These pupil diameters are measured simultaneously. The difference of the measurement allows assessment of the effect of pupil size such as a vision in dim light.

ø1 to 3.5 mm area
ø1 to 6 mm area
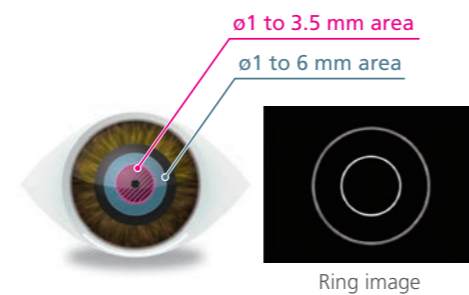
Ring image

Super luminescent diode and highly sensitive CCD

Incorporation of the super luminescent diode (SLD) provides a sharper and clearer image compared to a conventional LED. The highly sensitive CCD detects the ring image even if the fundus reflection is weak. The system, that combines the SLD and highly sensitive CCD, significantly improves measurement capability even in dense cataractous eyes.

Eye
Half mirror
Ring lens
Reflective mirror
SLD
Highly sensitive CCD

Hyperopia   Emmetropia   Myopia
Astigmatism   Astigmatism
Simulated ring image

Emitted SLD light   Reflected light   Ring image

SLD (normal eye)
LED (normal eye)
SLD (cataractous eye)*
LED (cataractous eye)*

Captured ring image

* In-house data of a cataractous model eye

Optimal fogging to minimize accommodation

Fogging is performed after correcting the patient's astigmatism with built-in cylinder lenses. This allows the patient to view the target clearly and minimizes the interference with accommodation even in high astigmatism.

Keratometry measurement with mire ring (available for the ARK-F)

The mire ring is used to measure keratometry. It reduces eyelid artifacts.

Measurement with four points
Measurement with mire ring

《FINISH》
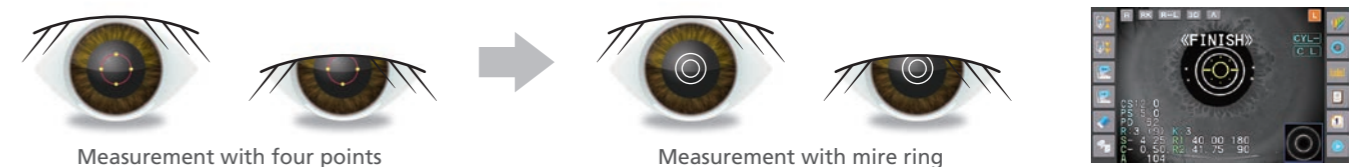
NIDEK eye detection camera (NEDC)

When the device recognizes that the patient's chin is correctly positioned on the chinrest, the new NIDEK eye detection camera (NEDC) automatically starts eye detection. Since NEDC holds eye position, faster and more precise alignment is possible without wasted adjustment time.

Flexible and space-saving design

Large tilt and swivel monitor

Since the screen can be continuously tilted and swivel, the ARK-F/AR-F can be placed anywhere in an examination area; installation against a wall or in a corner of the room is now possible. Of course, the conventional face-to-face position is still possible, but more comfortable than ever. Freedom of operator mobility even enables the support of a patient's eyelids during measurement. Flexible layout and space saving design contribute to improved productivity and efficiency.

Practical and user-friendly features

Patient-friendly accommodation measurement

Objective measurement of accommodation is performed with patient's focusing on a target which moves from distant to near. Intelligent algorithm detects the patient response and reduces the measurement time in cases with a slow or weak accommodative response.
The accommodation measurement helps to assess pseudomyopia, eyestrain, and accommodative palsy.
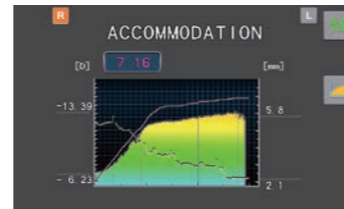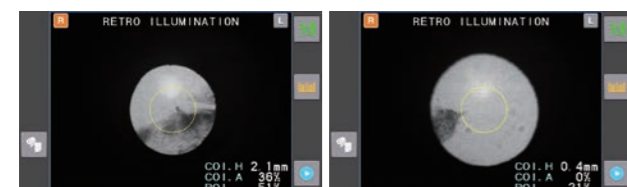
Emmetropia
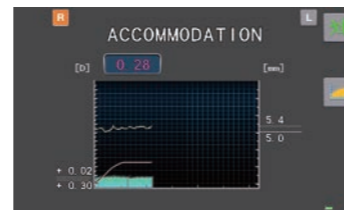
Presbyopia

Retroillumination image and NIDEK cataract indices

The retroillumination image enables the observation of opacity of the optical media of the eye. NIDEK cataract indices indicate the severity of the opacity and help to assess the progression of pathology.

COI.H	Opacity size within a diameter of 3 mm of the center (vertical diameter): mm
COI.A	Opacity proportion within a diameter of 3 mm of the center: %
POI	Opacity proportion within the entire periphery: %

Cataract indices

The NIDEK cataract indices are for reference only.
The following conditions may indicate different indices from ones of actual status.
✓ Peripheral image is darkly captured due to alignment position.
✓ Opacities are not in focus.
✓ Bright spot reflecting observation light occurs on the cornea apex.
✓ Position of the 3 mm diameter circle is shifted due to incorrect pupil detection caused by opacity location.

Eye with dense opacity   Eye with light opacity

Recall function for instant vision comparisons

The recall function provides the instant comparison between vision corrected with AR data and uncorrected vision or vision corrected with the data of patient's own glasses. For the patient, this function demonstrates the difference in vision and the necessity for more appropriate vision correction.
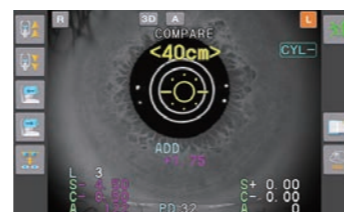
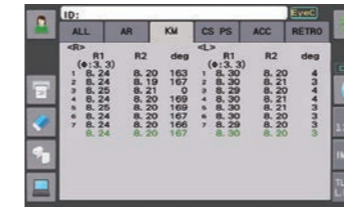| Distance vision corrected with AR data	Uncorrected distance vision
	Distance vision corrected with LM data*
Near vision corrected with AR data	Uncorrected near vision
	Near vision corrected with LM data*

Vision comparisons

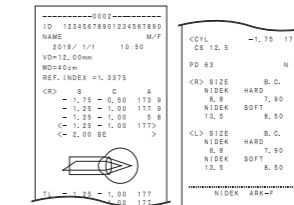*The data of patient's own glasses has to be imported from a NIDEK lensmeter.

Quick shot mode

Quick shot mode may be beneficial for children or others, who have difficulty holding their eyes steady during an examination.

*Quick shot mode is for reference.

Summary display

CS, PS, and PD measurement

CS (corneal size), PS (pupil size), and PD (pupillary distance) values can be measured manually based on eye images.

Summary display, printout and transfer of measured values

Various measured values can be displayed simultaneously on the summary screen allowing easy and quick confirmation and printing. Measured data can be exported to the NIDEK refractor or a connected computer.

Printout example

High speed printer with easy loading & auto cutter

The printer paper can be changed easily. The data sheet is cut by an auto cutter for quick and easy detachment.

Selectable model types

With the various models available, the ARK-F/AR-F will satisfy every user's needs.

| Type	A	B	C
WLAN for connecting with other devices	○	○	×
WLAN for tablet control	○	×	×
Manual operation	· Touch panel · Hand-held control or tablet control	· Touch panel · Hand-held control	

○: Available, ×: Not available
Tablet control is only available for the type A.
Each model is factory setting and cannot be modified later.

Network configuration with high flexibility

Quick and easy wireless data transfer

NIDEK refraction products allow for quick and easy wireless data transfer*using the Eye Care card, Bluetooth, WLAN or infrared communication. This is helpful for making a simple refraction system without complicated wired connection.

*The specifications for wireless data transfer differ according to each product and from country to country.
The requirements also differ depending on the method of wireless data transfer.

NIDEK Intelligent Refractor

NIDEK Auto Lensmeter
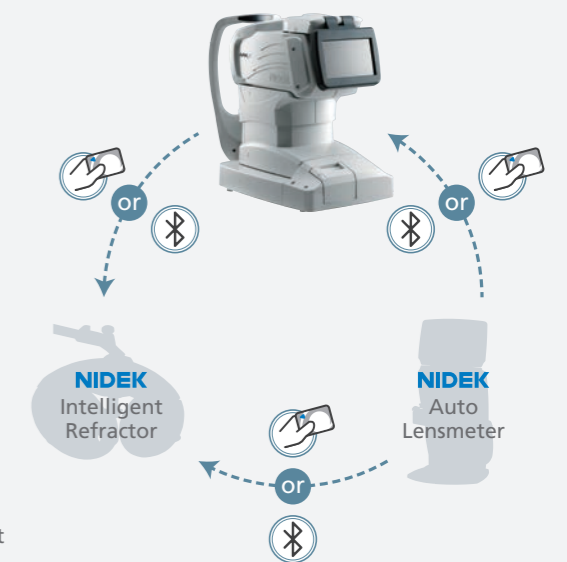
This configuration is just an example.