VX-10 / VX-10i, Two-In-One Non-Mydriatic and Mydriatic Fundus Cameras.
Highly effective and ergonomically designed, the ideal tool for eye-care photography!

### Various Photographic Modes

#### Non-Mydriatic Photography

**2 Optical Angles**
In this mode, angles 45° and 22° can directly be selected, making enlargement fast and easy.

#### Fixation Lamp Switching

3 fixation lamps: 2 internal lamps (posterior and central optic nerve head) and 1 external lamp (peripheral) are also selected in one touch switch, for easy guidance to the targeted area.

#### Mydriatic Photography
Mydriatic fluorescein angiography and mydriatic color photography are possible in this mode. In the mydriatic fluorescein mode, the fluorescein filter is inserted and removed electrically; in the mydriatic color mode, the use of optional filter enables red-free photography.

**2 Optical Angles**
In this mode, angles 50° and 25° are possible, directly selectable.

#### Small Pupil Photography
For patient's eye with insufficient pupillary dilatation, the built-in small pupil mode enables photography if the pupil diameter is more than $\varnothing 4.0$ mm. (angle 45° only)

* A VX-10i: 27°  
* B VX-10i: 30°
Non-myrdriatic color / mydriatic color / fluorescein angiography in just one camera!
The new VX-10i, featuring an optional ICG function, is adding enhanced capabilities to an already powerful fundus camera.

The easy to use navigation panel located at hand allows the selection of 3 modes (mydriatic / non-mydriatic / mydriatic / fluorescein) with just one touch switch for fast operations.

**Simple operations**
Multiple Step Flash, Matching Point Method, Long Eye Relief Design, all were meticulously elaborated to make the VX-10 series the simplest thus most effective and accurate tools ever.

**TV Observation Monitor**
In the mydriatic color mode, alignment and focusing adjustment are possible with the LCD monitor. The infrared observation light reduces light aversion and makes photography smoother. In this mode, when the pupil diameter of the patient's eye is superior than ø5.5mm, alignment and focusing adjustment with the LCD monitor, and 50*non-mydriatic photography are possible.

**Chart, Data Card Photography**
Chart, data card can easily be photographed with 35mm film.

**Polaroid Film Photography**
The large Polaroid printing area provides easy-to-read pictures.

![Mydriatic color and Non-mydriatic color](image)

**Multiple Step Flash for Proper Exposure in the Various Photographic Modes**
A wide range of light exposures assures proper exposure in every mode. Moreover, strobe light being extremely low when taking digital images, light aversion is significantly reduced.

**Working Distance Guidance and Focus Detection Functions for Clear and Sharp Images**
Alignment is made by simply adjusting the 2 right-and-left luminous spots with the joystick at hand; focusing adjustment is also easy with the point matching method.

![Viewfinder and LCD monitor](image)

**Operationally Focused, Darkroom Adapted Navigation Panel**
This navigation panel at hand has its buttons illuminated to allow quick and acute operations even in darkroom. Only usable switch buttons are illuminated according to each mode.

![Navigation panel](image)

**Clear Viewfinder with the Long Eye Relief Design**
With a long eye distance, the clear viewfinder allows comfortable photography.
The new VX-10i, camera of extended possibilities

With the optional ICG filter, VX-10i becomes the perfected fundus camera performing all non-mydriatic color, mydriatic color, FA and ICG!!

Enhanced with new capabilities
Featuring almost all VX-10 functions, the use of the optional ICG filter enables ICG angiography, in which mode LCD monitor observation is also possible. Besides, the use of the optional 1.4 mega pixel black and white CCD camera allows high-resolution ICG still image photography.

The mydriatic mode enables 50° and 30° photography. The angle 30° is particularly effective for retinal disease diagnosis (angle 50° only for ICG).

Multifunction Navigation Panel
Combined with photographic modes and digital imaging device, the navigation panel strengthens its functions.

Light Intensity when using Flash Photography in ICG Mode
In ICG mode, the "Camera Switching Button" operates as a "High/Low Switching Button" for flash light intensity compensation; from early phase to late phase, still images are always taken at proper exposure.

Extended Capabilities when Linked to the Digital Imaging System "Kowa VK-2"
When taking ICG still images through the optional filter:
- When the "EXT button" is ON, still images (early phase image) can be taken from moving images without flash.
- When the "EXT button" is OFF, flash is used (late phase image).
When using the optional 1.4 mega pixel B/W CCD camera to take still images, the "EXT button" in the ON position makes the camera sensitivity higher, allowing brighter late phase images.

PDT Mode Display (when linked to VK-2)
Measuring the maximum diameter of the lesion, it decides of the laser irradiation range.

Adapted to the Newly Developed CCD camera

Adapted to High-Pixel Digital CCD cameras
Combined with the 2.1 mega pixel x 3 (total 6.3 mega pixel) CCD camera (KD-630C) or the 2.1 mega pixel color CCD camera (KD-211C), images are taken in increased quality (also adapted to the existing Analog 3CCD Sony DXC-990).

Furthermore, the 1.4 mega pixel black and white CCD camera (KD-144i) has been newly developed exclusively for high-resolution ICG images.

Examples of combinations with the VX-10 exclusive video adapter

Example of combinations with the VX-10i exclusive video adapter

Kowa KD-630C
Image size: 1600 x 1216 pixels
Kowa KD-211C
Image size: 1600 x 1216 pixels
Sony DXC-990
Image size: 640 x 480 pixels
Adapted to KD-630C, KD-211C, and Sony DXC-990 cameras. In addition, one of those 3 can be fixed while the KD-144i is attached.
Kowa KD-144i
Image size: 1344 x 1024 pixels

Linked to VK-2, Adapted to Internal Networking
Linked to the Digital Imaging System VK-2, all images can be saved and shared through a LAN (Local Area Network), enabling establishment of an internal network system of your own.

One Click Image Processing
A simple click on the icon for easy controls

Comparison Image Display
Pre-registered reference model eye image

EDIT DATA
Annotations inputs on images

Enlargements

Multiple Image Display
2, 4, 6, 9, 16, 36 images can be displayed at the same time

PDT Mode
Combined with automatic perimeter

Digital Color
KD-211C

Digital Fluorescein (FA)
(B/W with timer on display)

Digital Fluorescein (ICG)
KD-144i
Digital Imaging System (Color • FA)
With both the VX-10 and the VX-10i, various digital imaging systems can be organized and the VK-2 system especially allows the composition of an ideal and original clinical environment, where all images can be shared anywhere as you wish through a LAN.

VK-2 High Performance Digital Imaging System
2.1 mega pixel × 3
(total 6.3 mega pixel)
CCD camera KD-630C
2.1 mega pixel color CCD camera KD-211C
Sony 3CCD camera DXC-990

ICG (option) System
Color photography with 35mm camera. Polaroid. fluorescein angiography with 35mm camera.

Moving Image Record only
VX-10i + Polaroid camera back

Color • FA • ICG (option) System
Digital image recording of all photography modes

Moving Image Record + Still Image Record
(Color • FA • ICG (option))
VX-10 + color CCD camera (KD-630C, KD-211C, DXC-990)

Moving Image Record + Still Image Record
(Color • FA • high resolution ICG(option))
VX-10i + KD-144i + color CCD camera (KD-630C, KD-211C, DXC-990)

Even more easier, even more user-friendly

VX-10 exclusive options
Video Adapters
(For KD-630C, DXC-990)

Video Adapters
(For KD-211C)

VX-10i exclusive options
Video Adapters
(For KD-144i, KD-630C, DXC-990)

Video Adapters
(For KD-144i, KD-211C)

VX-10 / VX-10i Common Options
Grip
This grip allows the patient to be perfectly stabilized and allows a smooth and safe photography.

Green Filter
Manual setting of this filter in the mydriatic color mode allows red-free photography to obtain high contrast fundus blood vessels and retina.

Internal Fixation Devices
ICG Filter

Polaroid Camera Back

35mm Camera Back

Digital Imaging System Kowa VK-2
<table>
<thead>
<tr>
<th></th>
<th>VX-10</th>
<th>VX-10i</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photographic Angles</strong></td>
<td>Mydriatic 50° 25°</td>
<td>Mydriatic 50° 30°</td>
</tr>
<tr>
<td></td>
<td>Non-Mydriatic 45° 22°</td>
<td>(50° for ICG option)</td>
</tr>
<tr>
<td></td>
<td>Non-Mydriatic 45° 22°</td>
<td>Non-Mydriatic 45° 27°</td>
</tr>
<tr>
<td><strong>Photographic Magnification #1</strong></td>
<td>50° ⇒ 2.0x</td>
<td>50° ⇒ 2.0x</td>
</tr>
<tr>
<td></td>
<td>25° ⇒ 3.6x</td>
<td>30° ⇒ 3.0x</td>
</tr>
<tr>
<td><strong>Picture Size</strong></td>
<td>35mm Film</td>
<td>84.5mm (vertical 71.5mm, horizontal 79mm Max.)</td>
</tr>
<tr>
<td></td>
<td>Polaroid Film Myd.</td>
<td>76.1mm (vertical 71.5mm, horizontal 76.1mm)</td>
</tr>
<tr>
<td><strong>Working Distance</strong></td>
<td>39mm (between objective lens and cornea)</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Pupil Diameter</strong></td>
<td>Non-Mydriatic mode ø 4mm</td>
<td>Mydriatic mode ø 5.5mm (small pupil mode ø 4mm)</td>
</tr>
<tr>
<td><strong>Focusing Luminescence</strong></td>
<td>Point Matching Method (ON/OFF switch)</td>
<td></td>
</tr>
<tr>
<td><strong>Dioptror Compensation Range (Patient's Eye)</strong></td>
<td>-12D → +13D</td>
<td>-10D → +35D (with + compensation lens)</td>
</tr>
<tr>
<td></td>
<td>-10D → -32D (with - compensation lens)</td>
<td>-8D → +5D</td>
</tr>
<tr>
<td><strong>Dioptror Adjustment Range</strong></td>
<td>2 luminous points display (ON/OFF switch)</td>
<td></td>
</tr>
<tr>
<td><strong>Viewing Illumination</strong></td>
<td>12V 50W Halogen lamp</td>
<td>12V 100W Halogen lamp</td>
</tr>
<tr>
<td><strong>Flash for Photography</strong></td>
<td>300WS Xenon flash lamp</td>
<td></td>
</tr>
<tr>
<td><strong>Flash Compensation</strong></td>
<td>± 2 steps</td>
<td>± 3 steps</td>
</tr>
<tr>
<td><strong>Internal Fixation Lamp</strong></td>
<td>4 fixed dots right or left eye switching (Non-Mydriatic mode)</td>
<td></td>
</tr>
<tr>
<td><strong>External Fixation Lamp</strong></td>
<td>red / green, blinking</td>
<td></td>
</tr>
<tr>
<td><strong>Internal Fixation Device</strong></td>
<td>Fixable (option)</td>
<td></td>
</tr>
<tr>
<td><strong>Amount of Exposure</strong></td>
<td>Proper exposure automatically set, based on angle of field and film sensitivity</td>
<td></td>
</tr>
<tr>
<td><strong>Filter</strong></td>
<td>Barrier &amp; exciter filter, electronic powered insertion</td>
<td></td>
</tr>
<tr>
<td><strong>Fluorescein Photography</strong></td>
<td>Photographic interval: 1 frame / sec. or at will</td>
<td>Option</td>
</tr>
<tr>
<td><strong>ICG Function</strong></td>
<td>-</td>
<td>Option</td>
</tr>
<tr>
<td><strong>Monitor</strong></td>
<td>5.6 inch, LCD monitor</td>
<td></td>
</tr>
<tr>
<td><strong>Video Input</strong></td>
<td>Composite</td>
<td></td>
</tr>
<tr>
<td><strong>Video Output</strong></td>
<td>-</td>
<td>Composite (ICG images (option))</td>
</tr>
<tr>
<td><strong>Data Imprinting</strong></td>
<td>Timer and handwritten data</td>
<td></td>
</tr>
<tr>
<td><strong>Audible Warning</strong></td>
<td>End of film, timer counter (ON/OFF selectable), tonal volume adjustment function</td>
<td></td>
</tr>
<tr>
<td><strong>Film Speed</strong></td>
<td>35mm color film: ISO100 Fluorescein: ISO400 (3 times development)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Polaroid Film: ISO600</td>
<td></td>
</tr>
<tr>
<td><strong>Movement Range</strong></td>
<td>Forward / backward (gross) 90mm (micromotion) approx. 22mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left / right (gross) 140mm (micromotion) approx. 22mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up / down 30mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tilt (angle) 15° (+angle) 8.5°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Horizontal swing (left/right) 30°</td>
<td></td>
</tr>
<tr>
<td><strong>Input #3</strong></td>
<td>AC100/117/220/240V 50/60Hz</td>
<td>AC100/120/230V 50/60Hz</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>1800VA (max) 180VA (standard)</td>
<td>1500VA (max) 280VA (standard)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>400(W) X 520(D) X 752(H) mm</td>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>approx. 40kg</td>
<td>approx. 37kg</td>
</tr>
</tbody>
</table>

#1 When using 35mm film, OD
#2 With Polaroid camera back
#3 220V, 230V, 240V for Europe
* Polaroid is a registered trademark of Polaroid Corporation, USA
* All other companies and product names stated here are trademark or registered trademark of each company.
* All specification and external design are subject to change without prior notice.

Kowa Company, Ltd.
World Sales Headquarters
4-14, Nihonbashibori-honbo 1-chome, Chuo-ku, Tokyo 103-8433 Japan
Phone: 81(3)3279-7331 Facsimile: 81(3)3255-7516
URL: http://www.kowa.co.jp/e-life/

Hamamatsu Factory
3-1, Shinshiyakudai 1-chome, Hamamatsu City, Shizuoka Pref., 431-2103 Japan

Kowa Europe GmbH
Immermannstrasse 65A
40210 Düsseldorf F.R. Germany
Phone: 49(211)7791540 Facsimile: 49(211)6191552
URL: http://kowa-europe.com/

Kowa Optimed, Inc.
20001 S. Vermont Ave. Torrance, CA 90602, U.S.A.
Phone: 1(310)227-1913 Facsimile: 1(310)327-4177
URL: http://medical.kowa.com/