The VHX-500 provides all functions, from zoom observation to advanced analysis.

Digital Microscope
Clear 3-D observation that is not available with conventional microscopes

All functions from observation to 3-D display are provided in the VHX-500 unit.

Do you need to clearly observe a target with more accuracy in less time?
The VHX-500 has been designed to meet these needs.
The VHX-500 not only provides advanced functions that provide ultra-deep and high definition observation, it can be easily operated by anyone. The VHX meets a variety of user’s requests for evaluation time reduction and quality improvement. Observation, recording and measurement can all be performed within the VHX-500.

NEW Digital Microscope VHX-500
Ease of operation superior to conventional microscopes —— P4-5

- Observation — Large depth of field
- Recording — Recording observed images on the spot
- Measurement — Providing real-time measurement

1. Clear observation —— P6-8
- 18,000,000-pixel handheld camera with the highest resolution in its class
- High-resolution RZ lens
- Contrast optimization (First in the industry)

2. 3-D observation —— P9-11
- Highest speed in the industry Real-time depth composition
- Highest speed in the industry Quick 3-D function (Hybrid D.F.D method)
- Various 3-D display and 3-D measurement modes

3. Easy operation —— P12
- Optimal observation with the push of a button

4. More accurate measurement —— P13-15
- Wide-visual-field, automatic 2-point distance measurement (Industry-first)
- 3-D profile automatic measurement
Ease of operation superior to conventional microscopes

The VHX-500 provides a depth of field at least 20 times larger than optical microscopes. Thus, the VHX-500 can accurately observe a target (even with a large height difference) that could not be focused on with conventional microscopes. Furthermore, the number of steps required for observation including focus adjustment can be reduced considerably.

Observation

Clear 3-D observation with a large depth of field

The VHX-500 provides a depth of field at least 20 times larger than optical microscopes. Thus, the VHX-500 can accurately observe a target (even with a large height difference) that could not be focused on with conventional microscopes. Furthermore, the number of steps required for observation including focus adjustment can be reduced considerably.

Observation at all angles

You can freely observe a target with the lens unit held by hand or mounted to the stand. You can capture any phenomenon exactly as it is and not overlook a defect by changing the observation angle. Furthermore, the time required for observation can be reduced considerably.

Real-time image improvement

Through various digital processing functions, the VHX-500 can solve problems on displayed images caused by low contrast or darkness. With the KEYENCE-original graphic engine, the VHX-500 enables real-time observation while using the image improvement functions, providing accurate observation without overlooking any phenomenon.
The VHX-500 includes a UXGA (1600 x 1200 pixels) high-resolution 15-inch LCD monitor. This monitor displays the observed images as well as the measurement information. Displayed images can be quickly saved onto the integrated HDD or CD-R/RW drive.

**Built-in Display**

The VHX-500 includes a UXGA (1600 x 1200 pixels) high-resolution 15-inch LCD monitor. This monitor displays the observed images as well as the measurement information. Displayed images can be quickly saved onto the integrated HDD or CD-R/RW drive.

**Recording**

Recording observed images on the spot

The VHX-500 incorporates a large-capacity (160 GB) HDD. Image files can be easily copied into your PC via LAN. Furthermore, the VHX-500 can be connected to various storage media. Saved images can be loaded instantaneously into your storage media. Since the VHX-500 can save moving images as well as still images, it can record a real change or minute motion of a target over time.

**Measurement**

Real-time measurement

Through simple mouse operations, the VHX-500 offers real-time measurement of the distance, radius, angle and area of a target on the monitor screen. Unlike systems that execute measurement after loading a still image into a PC, the VHX-500 can measure a target repeatedly while changing the visual field. This function is useful for measurement at various positions of a target.
Although the VHX-500 is compact, it provides high-definition (18 million pixels max.) observation using the CCD multi-scan system with a built-in actuator. Furthermore, with the progressive scanning method that eliminates glare, the VHX-500 produces texture expression and color reproduction similar to observation with the naked eye.

Through further improvement of the processing capacity, the VHX-500 has real-time camera-shake correction. This function allows high-magnification observation without being affected by environmental vibration.

With a frame rate of 15 frames/second, the VHX-500 provides excellent tracking ability, providing magnification change and focus adjustment to be performed smoothly.
Using KEYENCE-original optical technologies, the VHX-500 provides superior resolution, producing clear and accurate observation.

RZ lens

The VHX-500 uses the RZ (real zoom) lens, a high-performance lens that can correct chromatic aberration to an ideal value. Through the leading-edge optical design and advanced illumination technology, the VHX-500 can minimize aberration distortion. Furthermore, with the highly-telecentric lens design, the RZ lens can create extremely clear depth composition images and 3-D images.

High-resolution lens

The lens unit is comprised of 24 lenses in total, including 13 lenses for the objective section, and 11 lenses for the zoom section. Using a silica lens, the VHX-500 can correct chromatic aberration.

NEW

VH-Z20

Resolution approximately twice as high as conventional microscopes
A depth of field at least twenty times larger than optical microscopes
Optical 10x zoom covering 20x to 200x observation magnification

VH-Z100

High-resolution lens. Providing 2.5 times higher resolution than conventional microscopes
Optical 10x zoom covering 100x to 1000x observation magnification at a 0.98" (25 mm) observation distance
Extremely large depth of field: Approx. twice as deep as conventional microscopes

VH-Z500

High-resolution zoom lens
High-resolution lens with a numerical aperture (NA) of 0.82
Optical 10x zoom covering 500x to 5000x observation magnification
Polarizing illumination available
Optimal settings

With the KEYENCE-original graphic engine, you can always observe a target with optimal settings. Accurately observe parts without overlooking defects.

Optimal contrast

Real-time correction similar to the sensitivity of human eyes

With the optimal contrast algorithm, the VHX-500 automatically adjusts dark and bright areas to the optimal contrast, without changing the area with proper sensitivity. You can observe fine surface pictures which cannot be expressed only with illumination adjustment.

Eliminating halation

Eliminating the glare of a target

In addition to the contrast optimization, the KEYENCE halation eliminating function can suppress the glare of a target subjected to strong reflected light. This function can remarkably reduce the time required for illumination adjustment.

Additional image improvement functions applicable to various targets

Supercharge shutter
When the displayed image is dark due to insufficient light quantity, the shutter time can be specified in 0.1-second steps up to 17 seconds (max).

Gamma correction
Provides contrast for a target without brightness difference.

Edge enhancement function
Enhances the edges of an observation area, enabling easy detection of a minute flaw.

Noise elimination
Eliminates noise components only, with original image data retained.

Lighting

Lighting shift function
One-button control for enhancing projections and depressions

Simply by pushing the Height Difference Enhancement button on the console, the illumination mode is switched instantaneously to partial illumination that enhances target edges.

Full illumination
All illuminations at the tip of the camera unit turn on.

Partial illumination
Only one-fourth of the illuminations at the tip of the camera unit turn on. The projections and depressions are enhanced.

Supercharge shutter
Simply with the push of a button

Gamma correction
Simply with the push of a button

Noise elimination
Simply with the push of a button

e-Preview mode

One-click operation selects the image mode optimal for observation.

Simply by pushing the Optimal Image button, four types of image modes are listed. Then, you can click on an image suitable for your observation purpose.

Full illumination
Full illumination + image enhancement mode

Partial illumination
Partial illumination + image enhancement mode

Coating surface condition (500x)
Gold plating (100x)
Real-time depth composition

Effective for quick confirmation of the whole image (Approx. 5 times higher speed than conventional microscopes)

Real-time depth composition is so quick that you may not realize that you have executed the composition. You can view the overall-in-focus image in real time simply by turning the focus adjusting dial while observing a target. With the KEYENCE-original graphic engine, the VHX-500 can quickly display a composed image on the large (UXGA) screen. Therefore, you can save a considerable amount of labor and time required for composition.

High-quality depth composition

Composing sharp images with superior depth-of-field while correcting the edge deviations

With the KEYENCE-original hybrid D.F.D depth composition method, the VHX-500 can display a high-definition, overall-in-focus image without being affected by extraneous light. Furthermore, the VHX-500 provides the position correction function as a standard feature, which can correct edge displacement of a target image and magnification fluctuations caused by shift of the focus position. The VHX-500 can create a high-quality composed image.

Position correction

The VHX-500 corrects edge displacement caused by the shift of the focus position of a non-telecentric optical lens.

When an image with different focus positions is captured with a non-telecentric optical lens, the edge of the target image will be displaced when the focus position is changed. The VHX-500 can correct such edge displacement automatically and display a perfect, overall-in-focus image.
Quick 3D

A 3-D image can be displayed instantaneously by moving the lens downward.

Quick 3-D display

Ultimate ease of operation

Through improvements made to the hybrid D.F.D method, the VHX-500 lets you create a high-quality composed image instantaneously by turning the focus adjusting knob and proceeding directly to the 3-D display mode.

Focus on the highest point. Gradually shift the focus point downward.

High-quality composition is complete. Proceed directly to the 3-D display mode.

Electrode hole (1000x)

The 3-D image can be rotated freely or zoomed through mouse operations.

The D.F.D method is an abbreviation of the Depth from Defocus method, a way of obtaining 3-D depth data through analysis of defocus of 2-D images. Even if a completely focused image cannot be captured, the VHX-500 series calculates a height difference of the target. Thus, the VHX-500 series enables depth composition and 3-D image display by using less sample images than conventional microscopes. This method eliminates the need to load images on all focus positions, resulting in analysis efficiency improvement.

The hybrid D.F.D method provides the following features:

- Accurate composition even with a target that has a gentle slope and no remarkable unevenness. (A.D.I algorithm)
- Noise waveform generated on a target edge can be eliminated securely. (A.S.I filter)
3-D illumination simulation

Since the illumination direction can be changed freely through mouse control, the VHX-500 can capture optimal images according to the purpose of observation, such as inspecting the profile and surface condition. This function is effective for observation of fine surface conditions.

![Ceramic substrate (1000x) Normal 3-D image 3-D illumination simulation image](image)

3-D comparative function

This function compares two different targets placed side by side, while changing the observation angle. Furthermore, the newly added comparative difference display, allows you to capture a profile difference visually with two types of 3-D data superimposed.

Two-screen simultaneous comparative function Comparative difference display function

![Two-screen simultaneous comparative function Comparative difference display function](image)

Various measurements on the 3-D image

**Volume measurement**
A volume surrounded with the rectangle on a 3-D image can be measured.

**Cross-section profile measurement**
An arbitrary cross-section profile on a 3-D image can be measured.

**Plane distance measurement**
A distance between two parallel planes on a 3-D image can be measured.

**Plane angle measurement**
A cross-section angle of two arbitrary planes on a 3-D image can be measured.

![Volume measurement Cross-section profile measurement Plane distance measurement Plane angle measurement](image)
The console is intended to perform observation more quickly and easily. Commonly used functions are provided on the console, allowing you to observe any target clearly with the push of a button.

**Optimal contrast**
Adjusts the contrast automatically according to the sensitivity of human eyes.

**Height Difference Enhancement**
The full and partial illumination modes can be switched simply by pressing this button.

**Real Digital Zoom**
You can simultaneously zoom in on a desired observation spot.

**Camera-Shake Correction**
Corrects minute vibration such as environmental vibration, ensuring stable observation.

**Real-time depth composition**
Simultaneously composes images of a target with a height difference.

**Quick 3-D display**
Creates a 3-D image simply by moving the focus downward.

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**Useful observation functions**

<table>
<thead>
<tr>
<th>Split screen</th>
<th>Simplifies comparative observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Four-part split</td>
<td>Motor</td>
</tr>
</tbody>
</table>

---

**Easy data recording/application**

**Compatible with USB2.0**
The VHX-500 can be connected to various storage media (external memory devices) via the USB interface. (USB2.0)
You can quickly take observation results with your storage media.

* Some devices may not be compatible, depending on the specifications.

**VHX-500 communication software (Free software)**
Dedicated software that can be used on your PC.
This software enables data transmission/reception between the VHX and PC via LAN.
With the newly added high-speed transmission mode for LAN, data communication speed becomes three times higher than conventional models.
(Compatible OS: Windows XP/2000)

**Compatible with LAN / FTP server**
The VHX-500 provides a 1000baseT LAN port. You can take data from your PC browser or FTP software by setting a VHX IP address.

* For connection to a FTP server, additional software is required.

**VHX-500 3-D display software (Free software)**
This software reproduces a 3-D image captured with the VHX Series, allowing you to observe the 3-D image while changing the 3-D angle, as well as a still image. It's new report tool software can convey analysis results correctly to associated people by giving impact on the visuals.

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1.Windows XP/2000 are registered trademarks of Microsoft Corporation, U.S.A.
Real-time on screen measurement

High-resolution dimensional measurement

Accurate measurement on the 4800 x 3600 sub-pixel screen
With an overall view, it is difficult to accurately select measurement points. With a close-up view, the measurement points may not appear on the same screen. The VHX-500 zooms in as you select the measurement points, then returns to the overall view for easier observation.

Auto calibration

A special glass scale simplifies automatic calibration. Automated calibration according to the observation magnification can be performed using the special glass scale (op-51483). Accurate dimension measurements can be performed without significant measurement errors.

Auto edge selection

Accurate observation by eliminating operator errors
Even when the measurement point specified by clicking the mouse on the screen is deviated, the edge of the target is detected to correct the measurement point automatically. This function realizes accurate and highly reliable dimension measurement by eliminating the reading errors of operators.

Various measurement modes

Distance

The distance between two points on the screen can be measured by specifying the points with the cursor.

Radius

The radius of the circle can be measured by specifying the desired three points on the screen.

Center distance

Specify three points on the circumference to find the coordinate of the circle center. The distance between two circle centers can be measured by specifying two circles sequentially.

X-Y distance

The longitudinal (X-direction), transversal (Y-direction), and diagonal (D-direction) distances of a rectangle formed by four coordinate axes (two in the X-direction and two in the Y-direction) can be measured at one time.

Area/Count/Auto measurement

The target of the measurement can be extracted automatically by differentiating the brightness and colors in the image. The area and the perimeter length are measured. The number of extracted areas can be counted automatically as well.

Connector crimp (100x)

The shortest distance between two parallel lines can be measured by specifying two arbitrary points that draw a line and another line parallel to the first line.

Length of perpendicular line

The shortest distance (perpendicular line) between a line specified with two arbitrary points and another arbitrary point can be measured.

Angle

The angle determined by three arbitrary points on the screen can be measured.

Overlay Scales

Bar, mesh, cross and other various shapes can be displayed as a scale. These can be conveniently used as the reference scale for simplified measurement or for printing the images.
3-D profile measurement using a microscope

With the high-precision electric linear stage and the newly-developed profile measurement function, the VHX-500 integrates all steps from zoom observation to 3-D profile automatic measurement.

**Profile Measurement Unit**

3-D automatic profile measurement unit

Optional

### 3-D profile measurement

The VHX-500 creates a 3-D image based on automatically captured images, and it calculates height profile data on a desired measuring line. Height, width and height difference data on the measuring line are plotted on a graph. Since the profile graph is related to the cursor position in the image display area, you can see the current measuring point easily.

With the horizontal/vertical cursor, the height and width can be measured. The 2-line comparative mode can simultaneously display comparative analysis profile data on two parallel lines.

![3-D profile measurement](image)

### Height color/scale display

Color bars that indicate height are displayed on a 3-D image. The highest position is displayed in red, and the lowest position is displayed in blue, allowing you to see a height difference at a glance. The height data can be superimposed on a raw image. Furthermore, the X-axis, Y-axis and Z-axis scales are calculated automatically and displayed according to the image size and the 3-D rotation angle.
2-point height difference measurement

The VHX-500 can quickly and automatically measure a height difference between specified windows in the automatic measurement mode. In the manual measurement mode, you can measure a height difference between two points while monitoring the focus conditions.

Auto focus

This function helps everyone to perform high-magnification focus adjustment quickly and accurately. The auto focus can be applied even to a target with uneven surface conditions, since the focusing area can be specified on the screen.

All-in-one system

Centralized control of stage operation, observation and analysis

All steps from stage operation, zoom observation and 3-D analysis to image-saving and network connection are controlled in the VHX unit. You do not need a device or PC for stage operation or analysis. This system saves space and provides high operating efficiency.

Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VHX-S15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable lens</td>
<td>VH-Z500, VH-Z450, VH-Z100, VH-Z75</td>
</tr>
<tr>
<td>Stage stroke distance</td>
<td>0.59&quot; 15 mm</td>
</tr>
<tr>
<td>Motor</td>
<td>5-phase stepping motor</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.002 Mil 0.05 µm/pulse</td>
</tr>
<tr>
<td>Positioning accuracy *</td>
<td>0.23 Mil 6 µm</td>
</tr>
<tr>
<td>Repeatability *</td>
<td>±0.02 Mil 0.5 µm</td>
</tr>
<tr>
<td>Ratings</td>
<td>Power supply voltage: 100 to 240 VAC, 50/60 Hz, Power consumption: 70 VA</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>+5 to 40°C (41 to 104°F)</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>35 to 80% RH (No condensation)</td>
</tr>
<tr>
<td>Weight</td>
<td>Controller: 3 kg, Electric stage: 1.3 kg</td>
</tr>
<tr>
<td>Load capacity</td>
<td>5 kg</td>
</tr>
</tbody>
</table>

*Typical value of electric stage single unit

Option

Digital indicator set OP-51610
Digital indicator for direct measurement of the lens stroke distance, ensuring easy calibration
Applications

Wide range of applications to meet the needs of various industries

Electric/Electronics
- HDD head (100x)
- LCD (800x) LED (200x)
- IC pattern (1000x)

Transportation/Metal Industries
- Fracture surface (500x)
- Microstructure of metal (400x)
- Grind stone (500x)
- Tip of ballpoint pen (200x)
Absorbs low to high frequency vibration, allowing for observation of specimens without interference.

The mounting arm is held in place with a wedge-shaped channel. This prevents the arm from moving during observations.

The cable is held in place, preventing vibration. The cable is also protected against abrasions and deterioration.

The die-cast main body provides a highly rigid structure that allows for more stable observations.

NEW Free-angle observation system  VH-S30

Vibration Proof / Super High-accuracy

EASY-TO-ADJUST
Easy adjustment of visual field (height), rotation, and oblique axis. A custom mechanism allows the target to stay in focus, even when the lens unit is inclined or rotated.

QUICK SETUP MARKS
The ideal setting position for different lenses is indicated on the arm.

WEDGE-SHAPED CHANNEL
The mounting arm is held in place with a wedge-shaped channel. This prevents the arm from moving during observations.

CABLE HOLDER
The cable is held in place, preventing vibration. The cable is also protected against abrasions and deterioration.

STABILITY
The die-cast main body provides a highly rigid structure that allows for more stable observations.

VIBRATION PROTECTION
Absorbs low to high frequency vibration, allowing for observation of specimens without interference.
Easy to operate

SIMPLE ADJUSTMENT
It is easy to adjust the optical axes by simply positioning the stage at the indicated height. The instructions are provided on the base of the stage, allowing new users to immediately begin using the VH-S30. (Patent pending)

FLEXIBLE OPERATION
Observation can be performed from any angle without moving the lens. You can instantly find the best position to observe an object. Since the VH-S30 does not use a mirror, it enables the user to observe objects as they normally appear. (Patent pending)

Excellent vibration protection
A special vibration proof material has been selected to insulate the VH-S30. It is designed to absorb a broad range of vibrations in order to provide stable images of highly magnified objects.

The vibration protective rubber is the same material used for vision inspection systems and high-accuracy measurement devices in the semiconductor, R&D, and automotive industries.

Ultra precise mechanism
The stage combines the flexibility and ultra precision that are critical to a wide range of applications.

Super fine adjustment dial
In addition to the course adjustment dial, the super fine adjustment dial can be adjusted in 5 µm steps.

Ultra precise bearing
The oblique axis uses an ultra precise bearing to accurately position the central axis.
Three types of high-resolution, high-performance RZ lenses

High resolution, Ultra-small
High-performance zoom lens

Approx. twice the resolution of conventional lenses
As a result of concentrating many years of microscope experience and the essence of KEYENCE optical technologies, the VH-Z20 is designed to provide high-class resolution.

Excellent depth of field: Approx. twice as large as conventional lenses
The large depth of field, which is the greatest feature of the VHX Series microscope, has been intensified further. The VH-Z20 provides a larger depth of field than conventional lenses. You can observe a target easily with uneven surface conditions.

Optical adapters for the VH-Z20 (Z25)

Variable illumination adapter
With the KEYENCE-original optical mechanism, the variable illumination adapter covers both vertical illumination and lateral illumination without irregularity in the illuminating conditions. The optimal illumination angle can be selected.

Coaxial vertical illumination adapter
The coaxial vertical illumination adapter emits light parallel to the lens axis. Using this adapter, the microscope can retain sufficient light quantity for illumination. This adapter is useful for observation of metal microstructures, IC, etc. in a bright visual field.

* The above photo is the optical adapter for VH-Z20(Z25).
Wide-range zoom lens offers high resolution and large depth of field

Wide range zoom: 10x optical zoom
The VH-Z100 is designed for a wide zoom range, seamlessly covering from the whole image to an enlarged view of a target. Since the VH-Z100 retains a constant observation distance throughout the zoom range, it can improve operating efficiency. It is an all-around zoom lens applicable to any target.

Highly-telecentric zoom lens
With the highly-telecentric lens design, the RZ lens can create extremely clear and perfect depth composition images and 3-D images. The RZ lens can make the best use of the digital focus functions that are an essential feature of the VHX Series.

Polarization illumination adapter
Effective for suppressing glare during observation through a transparent film or coating.

Diffuse illumination
You can observe real surface conditions without the glare of a target. The diffuse illumination adapter emits both vertical illumination and lateral illumination.

<table>
<thead>
<tr>
<th>Model</th>
<th>VH-Z100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnification</td>
<td>100x</td>
</tr>
<tr>
<td>Monitoring range (mm)</td>
<td>H: 3.05</td>
</tr>
<tr>
<td>Monitoring range (mm)</td>
<td>V: 2.28</td>
</tr>
<tr>
<td>Monitoring range (mm)</td>
<td>D: 1.81</td>
</tr>
</tbody>
</table>

1. Magnification on a 15-inch monitor
2. When the ring illumination adapter is attached

Real Zoom Lens
High-resolution zoom lens is the pinnacle of optical lenses

The VH-Z25 can continuously change magnification from 25x to 175x without the need for lens replacement. You can quickly find an observation point at low magnification and then directly zoom in on the observation point. The VH-Z25 provides two types of illumination heads (contact type and non-contact type) as standard equipment. The non-contact type illumination head provides an observation distance of 1.00” (25.5 mm), improving your operating efficiency.

Numerical aperture (N.A.) of 0.82 at a distance of 0.17” (4.4 mm)
Optical aberration has been minimized by using 24 high-grade lenses. The large-diameter spherical lens has achieved an observation distance of 0.17” (4.4 mm). This is an ideal zoom lens featuring both high resolution and ease of use.

Optical 10x zoom from 500x to 5000x magnification
The development of this high-resolution lens with almost no optical aberration easily provides a zoom range 10 times wider than conventional models. High-resolution images with minimum distortion can be obtained within the entire zoom range.

Polarizing illumination mechanism
The polarizing illumination mechanism blocks unnecessary reflected light from an observation target by adjusting the light quantity to an optimal level. It is suitable for viewing a target through a transparent film.

Zoom lens
A single lens unit covers 25x to 175x magnification.
The VH-Z25 can continuously change magnification from 25x to 175x without the need for lens replacement. You can quickly find an observation point at low magnification and then directly zoom in on the observation point. The VH-Z25 provides two types of illumination heads (contact type and non-contact type) as standard equipment. The non-contact type illumination head provides an observation distance of 1.00” (25.5 mm), improving your operating efficiency.
Low-range zoom lens | VH-Z05

0x to 40x magnification for viewing the entire target

This low-range zoom lens provides a magnification of between 0x and 40x, allowing the entire target to be monitored as well as providing a magnified view. You can easily capture an image of the whole target without using an external camera, perfect for inserting into your report or reference document. The monitoring distance is 3.74" (95 mm) or more, ensuring improved workability.

Long-focal-distance zoom lens | VH-Z35

35x to 245x magnification at a distance of 2.13" (54 mm)

With a monitoring distance of 2.13" (54 mm) and extremely high depth-of-field, this lens provides a convenient way to monitor a target with height differences on the surface. This wide working space greatly increases monitoring efficiency. With a single lens, you can monitor from a low magnification (35x) to a high magnification (245x), allowing the desired point to be quickly enlarged.

Middle-range zoom lens | VH-Z150

150x to 800x magnification, ideal for monitoring bright images.

This middle-range zoom lens allows continuous changes in magnification of between 150x and 800x. It can be used to monitor at a distance 0.47" (12 mm) at 800x magnification. The illumination head can be switched to a coaxial vertical illumination type to enable detailed observation of Microstructure of metal or a semiconductor surface.

High-range zoom lens | VH-Z450

450x to 3000x magnification with vertical/penetration illumination.

This high-range zoom lens allows continuous changes in magnification between 450x and 3000x. The high-resolution lens and optical edge enhancement function ensure higher reproduction than a conventional microscope. The lens provides a magnification of 3000x at a monitoring distance of 0.29" (7.3 mm), ensuring improved workability. A special stand with penetration illumination is also available, further expanding the applications of this lens.

HD middle-range zoom lens | VH-Z75

75x to 750x magnification

This lens allows continuous changes in magnification between 75x and 700x. The high-quality lens offers excellent resolution. The monitoring distance of 1.82" (46.2 mm) at 750x greatly improves workability. This lens achieves high performance surpassing conventional microscopes in both image quality and workability.
Borescope lens  | OP-32662/32663/32664/32665/32666

Two observation directions (direct view and lateral view) with a single unit.

The borescope unit provides a 90° lateral view attachment as standard equipment, enabling observation directions to be switched between direct view and lateral view. Five types of bore diameters are available, allowing you to select an appropriate diameter according to your observation purpose. The monitoring magnification is 80x to 360x, 1.2 to 5 times larger than conventional models. You can clearly observe even minute targets that cannot be observed with conventional models.

Borescope lens  | VH-B31/B32/B61/B64

ø3-mm sleeve for viewing inside a narrow gap

The 3-mm sleeve diameter enables you to easily monitor inside a narrow gap or complicated shape. Select from two types of end shapes: Direct-view and oblique-view. Only the lens is contained in the sleeve, enabling excellent resolution. The borescope lens is completely waterproof for underwater observation.

*In addition to the above, many size variations are available. For more information, contact the nearest KEYENCE sales office.

Fiberscope  | VH-F61/F111

Monitoring a complicated shape

The fiberscope allows you to monitor places where conventional lenses cannot be used, such as the inside of a complicated machine or a narrow, bending pipe. You can even monitor blind spots by changing the angle of the top of the fiberscope remotely.

Inspecting pipes

Inspecting the inside of a photocopier
Long-focal-distance lens | VH-W50/W100/W200

Working while monitoring target

The long-focal-distance lens provides a long monitoring distance of 2.36" to 3.07" (60 to 78 mm), allowing you to continue working while monitoring a target. You can view clear images even when close monitoring is impossible, such as a target in a recess or the presence of a glass plate between the lens and target.

Hyper-view lens | VH-V100/V200

Easy monitoring of a glossy target with minimum halation

The hyper-view lens suppresses halation (reflection) from a glossy surface, enabling detailed monitoring. You can easily detect a flaw, stain or crack on metal, glass or ceramic surfaces that are difficult to detect using conventional microscopes.

Vertical-illumination lens | VH-C501/C1001

Monitoring metal surfaces

The vertical-illumination lens utilizes our original optical system to give it a thin body. You can clearly monitor Microstructure of metal or a semiconductor surface, which are hard to see using conventional lateral illumination. Two models are available with magnification factors 500x and 1000x.

Fixed-magnification lens | VH-20/50/100/200/501/1001

Lens selection based on desired magnification

Select your desired magnification between 20x and 1000x. These fixed-magnification lenses provide a larger depth-of-field than conventional microscopes, enabling you to obtain a sharp 3-D image. Two types of illumination heads are included: Contact and non-contact (except for VH-20).

Keyboard

Useful for entry of detailed observation data for recording files

Comments and observation conditions (lens and magnification data used for recording files) can be entered with the onscreen keyboard. A DOS/V PS2 type keyboard can also be connected.

Footswitch

Foot operation is enabled even if your hands are full.

During handheld operation, you can stop and record an image with the foot switch, even if both hands are full or you cannot reach the operation panel. (Commercially available)
Ultimate depth of field

Quick, high-quality depth composition
An image of the desired area with poor focus can be composed automatically by simply turning the focus-adjustment knob while observing the real-time image on the screen. As a result, the time and labor required for composing images can be reduced dramatically. In addition, KEYENCE’s original image-processing technology enables high-speed display of large images (UXGA).

Extensive expression ability

D.F.D 3-D display function
The 3-D display function provides visual expression of projections and recessions in a 3-D image, allowing you to detect a phenomenon that cannot be seen in a 2-D image. This function enables accurate analysis and persuasive image capturing.

Just turn the knob

The composition is complete.

Battery safety valve (700x)

Electrode hole (1000x)
This next-generation printer satisfies the needs of research, development and manufacturing fields.

5 million-pixel, high-definition printing (Automatically compresses 18 million-pixel images.)

This printer provides image quality of 385-dpi, which is close to film photographs. The maximum printing size is 2564 x 1920 pixels 6.65” x 5.00” (169 x 127 mm) with a print quality of 5 million pixels. The DP-500 boasts an excellent printing quality that enables the detailed recognition of precise images.

Colors will not fade. Over-coated printing is supported as standard.

Over-coated printing with excellent light, heat, and moisture resistance is provided as standard. Durability of 100 years or longer is ensured for printouts stored in albums. Colors will not deteriorate, enabling accumulation of an accurate database.

High capacity and small footprint. 1.5 times greater capacity and 50% smaller footprint.

200 L-size prints can be printed consecutively. While providing a large capacity, a sleek stand-up design is achieved with approximately one half of the footprint (compared to KEYENCE conventional models). The DP-500 is easy to install in a limited space such as laboratories, providing printouts on the spot when needed.

Easy storage. Fits nicely into albums.

The sheet size is small enough to fit into off-the-shelf albums or refill pocket sheets for photographs. Unlike conventional printers, there is no need to cut the photograph to a smaller size. The printed photograph can be filed as is, further eliminating the time and labor required for conventional models.

Notes are printed simultaneously. Photographs can be sorted out accurately and easily. Comments appended to the image can be printed on the margin when printing images, eliminating the time and labor required for writing the descriptions afterward. A database that is easy to access for anyone can be constructed easily.

DP-500 Digital Photo Printer

- Model: DP-500
- Print method: Sublimate thermal print
- Resolution: 385 dpi, 2564 x 1920 pixels max. (2L size)
- Tone level: 256 levels for Y, M, and C respectively, full color of approx. 16,770,000 colors
- Sheet/print size: Standard: 5.00” x 4.00” 127 x 95 mm (1920 x 1444 pixels)
  L: 5.00” x 3.42” 127 x 89 mm (1920x 1348 pixels)
  2L: 6.65” x 5.00” 169 x 127 mm (2564 x 1920 pixels)
- Printing time: Approx. 40 seconds (L size)
- Paper feed method: Machine-glazed paper system
- Interface: USB1.1
- Power supply: 100 to 240V AC 50/60 Hz
- Current consumption: 250 VA max. during printing
- Ambient temperature: 5 to 40°C (41 to 104°F), No condensation
- Relative humidity: 20 to 80%, No condensation
- Dimensions: 6.18” (W) x 11.02” (H) x 14.61” (D) 157 x 280 x 371 mm
- Weight: 11 kg

1: Windows XP/2000/Me/98 Second Edition are registered trademarks of Microsoft Corporation, U.S.A.
VHX Series System Line Up

System configuration

LONG-FOCAL-DISTANCE LENS

- Adjustable illumination adapter
  - VH-K25
- Super-diffuse illumination adapter
  - OP-42305
- Polarization illumination adapter
  - OP-3541
- Diffuse illumination adapter
  - OP-35324
- Non-contact diffusion adapter
  - OP-35414
- Multi-diffuse adapter
  - OP-35469
- Free head 6.
  - OP-32348
- Coaxial vertical illumination adapter
  - OP-35416
- Adjustable illumination adapter
  - VH-K150
- Non-reflective illumination ring
  - OP-32009

RING ILLUMINATION BASE UNIT

- Head
  - OP-72407
- Fiber
  - OP-72406

RZ LENS

- High-resolution zoom lens
  - VH-Z500 1.
- Wide-range zoom lens
  - VH-Z20
- Ultra-small, high-performance zoom lens
  - VH-Z20

ZOOM LENS

- Zoom Lens
  - VH-Z25
- Long-focal-distance zoom lens
  - VH-Z35
- Middle-range zoom lens
  - VH-Z150
- Low-range zoom lens
  - VH-Z05
- High-range zoom lens
  - VH-Z450 1.
- HD middle-range zoom lens
  - VH-Z75 1.

HYPER-VIEW LENS

- VH-V100 (100x)
- VH-V200 (200x)

VERTICAL-ILLUMINATION LENS

- VH-C501 (500x)
- VH-C1001 (1000x)

BORESCOPE LENS

- VH-B31
- VH-B32
- VH-B61
- VH-B64

BORESCOPE LENS 1

- OP-32664
- OP-32665
- OP-32666
- OP-32667
1. The optional light guide dedicated to the VHX Series is required.
2. The optional light guide attachment dedicated to the VHX Series is required.
3. A C-mount adapter suitable for the microscope is required.
4. For coaxial illumination, OP-72407 and OP-72406 are required.
5. For the VH-Z100/Z450/Z500, OP-51647 is required.
6. OP-32348 is the special adapter for the VH-Z25.
### Specifications (Basic functions)

<table>
<thead>
<tr>
<th>Model</th>
<th>VHX-500</th>
<th>VHX-100</th>
<th>VHX-100N 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Image receiving element</strong></td>
<td>1/1.8-inch, 2.11 million-pixel CCD image sensor 1/2-inch, 2.11 million-pixel CCD image sensor</td>
<td>Total pixels: 1688 (H) x 1248 (V) Effective pixels: 1628 (H) x 1236 (V) Virtual pixels: 1600 (H) x 1200 (V)</td>
<td>Effective pixels: 1628 (H) x 1236 (V)</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>2 million pixels</td>
<td>1600 (H) x 1200 (V) Approx. 1000 TV lines 4 million-pixel equivalent 1600 (H) x 1200 (V) Approx. 1200 TV lines</td>
<td>8 million pixels 3200 (H) x 2400 (V) Approx. 1600 TV lines 16 million pixels 4800 (H) x 3600 (V) Approx. 2000 TV lines</td>
</tr>
<tr>
<td><strong>Frame rate</strong></td>
<td>15 frames/sec. and 28 frames/sec. selectable</td>
<td>7.5 frames/sec. and 30 frames/sec. selectable</td>
<td>Not required</td>
</tr>
<tr>
<td><strong>Gain</strong></td>
<td>AUTO</td>
<td>AUTO, NORMAL, MANUAL</td>
<td>AUTO, NORMAL, MANUAL</td>
</tr>
<tr>
<td><strong>Electronic shutter</strong></td>
<td>AUTO, MANU, OFF, 1/15, 1/30, 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/5000</td>
<td>0.2 sec. to 17 sec. Can be set in increments of 0.1 sec.</td>
<td>Auto, Manual, One-push set, Preset (2700K, 3200K, 5600K, 9000K)</td>
</tr>
<tr>
<td><strong>Back-focus adjustment</strong></td>
<td>Not required</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LCD monitor

- **Size**: Color LCD (TFT) 15" Without an LCD monitor
- **Panel size**: 11.99" (H) x 8.99" (V) 304.5 (H) x 228.4 (V) mm
- **Pixel pitch**: 0.008" (H) x 0.008" (V) 0.1905 (H) x 0.1905 (V) mm
- **Number of pixels**: 1600 (H) x 1200 (V) (UXGA)
- **Scan frequency**: 75 kHz (H), 60 Hz (V)
- **Display color**: Approx. 16,770,000 colors 2
- **Brightness**: 200 cd/m² (typical)
- **Contrast ratio**: 500 : 1 (typ), 400 : 1 (typical)
- **Viewing angle**: +85° (typical, horizontal), +85° (typical, vertical)

### CD-R/CD-RW drive unit

- **CD-R/CD-RW drive unit**: CD-R/CD-RW
- **Speed**: 24x Write, 10x Re-write, 24x Read
- **Storage capacity**: 700 MB, approx. 3500 images (When a 2 million-pixel image is compressed) to approx. 117 images (When a 2 million-pixel image is not compressed)
- **Lamp**: 12 V, 100 W, Halogen lamp (OP-91641)
- **Lamp life**: 1000 hours (average)
- **Color temperature**: 3100 K (at maximum light intensity)

### Hard disk drive unit

- **Hard disk drive unit**: Total pixels: 1688 (H) x 1248 (V) Virtual pixels: 1600 (H) x 1200 (V) (UXGA)
- **Storage capacity**: 160 GB (including 45 GB reservation area), approx. 575,000 images (When a 2 million-pixel image is compressed) to approx. 19,000 images (When a 2 million-pixel image is not compressed)
- **Lamp**: 12 V, 100 W, Halogen lamp (OP-91641)
- **Lamp life**: 100 hours (average)
- **Color temperature**: 3100 K (at maximum light intensity)

### Light source

- **Output**: Analog RGB (1600 x 1200 pixels)
- **Scanning frequency**: 75 kHz (H), 60 Hz (V)
- **External monitor**: 75 kHz (H), 60 Hz (V)

### Input

- **Mouse input**: MINI-DIN 6-pin connector (DOS/V-compatible PS/2 mouse)
- **Keyboard input**: MINI-DIN 6-pin connector (DOS/V PS/2)
- **External remote input**: Pause/Recording, Non-voltage input (Contact/Noncontact)

### Interface

- **LAN**: RJ-45 (10BASE-T / 100BASE-TX / 1000BASE-T)
- **USB2.0 Series A**: 4 types: Special printer port x 1, VHX-S15 port x 1, External storage connection port x 2, PC connection port x 1
- **USB2.0 Series B**: –
- **Power-supply voltage**: 100 to 240VAC, 50/60Hz
- **Current consumption**: 310VA
- **Power-supply voltage**: 85 to 132 VAC, 170 to 265 VAC, 50/60 Hz
- **Current consumption**: 260 VA

### Environmental resistance

- **Ambient temperature**: ±5 to 40°C (41 to 104°F), No condensation
- **Relative humidity**: 35 to 80%, No condensation

### Weight

- **Controller**: Approx. 11.9 kg
- **Camera unit**: Camera : Approx. 250 g, Cable : Approx. 600 g All-in-one
- **Camera unit**: Camera : Approx. 250 g

### Dimensions

<table>
<thead>
<tr>
<th>Dimensions (Excluding the projected areas)</th>
<th>VHX-500</th>
<th>VHX-100</th>
<th>VHX-100N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total pixels: 1688 (H) x 1248 (V)</td>
<td>1628 (H) x 1236 (V)</td>
<td>1600 (H) x 1200 (V)</td>
<td></td>
</tr>
<tr>
<td>Virtual pixels: 1600 (H) x 1200 (V)</td>
<td>1628 (H) x 1236 (V)</td>
<td>1600 (H) x 1200 (V)</td>
<td></td>
</tr>
<tr>
<td>Approx. 16,770,000 pixels</td>
<td>1600 (H) x 1200 (V)</td>
<td>1600 (H) x 1200 (V)</td>
<td></td>
</tr>
</tbody>
</table>

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1. Approximately 16,770,000 pixels are realized with the dithering processing of the display controller.
2. The LCD monitor provided in the VHX Series is based on extremely advanced technology. Rarely, an unlit part (black spot) or lit part (bright spot) may exist on the monitor screen. However, this is not an indication of the LCD monitor being defective.
3. The VHX-H2M and VHX-H1M are the software dedicated to the VHX-500 and VHX-100F (VHX-100FN), respectively.
### Specifications (Various functions)

<table>
<thead>
<tr>
<th>Model</th>
<th>VHX-500</th>
<th>VHX-100</th>
<th>VHX-100N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Various controller functions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth composition function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Hybrid D.F.D 9-D display function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D illumination simulation function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D two-screen simultaneous comparison function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Saving a 3-D 360°-rotation image</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Real-time digital zoom</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Optimal contrast function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Halation eliminating function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Noise eliminating function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Supercharge shutter function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Edge enhancement function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Wide range view function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Gamma correcting function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Camera-shake correcting function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Split function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Moving image recording/reproducing function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Timer recording function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td><strong>Measuring function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automatic unit VHX-S15 control function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>High-resolution dimensional measurement function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Wide-visual-field automatic 2-point measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Distance, angle, radius, area, etc.</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Automatic count/measurement function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Scale display</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Automatic edge detection</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Auto calibration</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D profile measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td><strong>Measuring function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-D height color/scale display function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>2-point height difference measurement function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Auto-focus function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Cross-section profile measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D volume measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
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<tr>
<td>3-D plane distance measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D plane angle measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td><strong>Utility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete style covering Observation, Recording and Measurement</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Mail transmission function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Pop-up guide</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Bayonet-type attachment</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Keyboard entry</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Compatible with a foot switch</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Function guide</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td><strong>Console/ Front panel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pause</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Recording</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Shutter speed adjustment</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Supercharge shutter</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>One-touch 2x zoom</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Depth composition function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Quick 3-D display function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Frame rate switching</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Light shift function (Height difference enhancement)</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>e-preview mode</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Camera-shake correcting function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Optimal contrast function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Halation eliminating function</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Sensitivity quick adjustment dial</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>Halogen lamp light intensity adjustment</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td><strong>Accompanying software</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PC communication software</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
<tr>
<td>3-D reproduction software for the PC (Trial software)</td>
<td>Provided</td>
<td>Provided</td>
<td>Provided</td>
</tr>
</tbody>
</table>

**Model**: VHX-500, VHX-100, VHX-100N
Analysis of capacities of SEMs and roughness meters are easily produced, as if you were using an optical microscope.

Ultra-deep color 3-D profile measurement microscope VK-9500

- Observation magnification: 200x to 18000x
- High resolution and large depth of field comparable to SEMs
- Z-axis measurement resolution: 10 nm
- Abundant analyzing functions, including profile and roughness
- Applicable to large-size samples
- Provides an image combination function that enables wide-visual-field analysis