Video Measuring System

iNEXIV

VMA Series

Wide FOV Model
Nikon offers the ultimate usability for a wide variety of measuring applications with the wide FOV, long XYZ stroke iNEXIV VMA series.

- Automatically measures various components, such as plastic injection molds and electronic parts, with high accuracy and repeatability.
- Allows measurements of tall and uneven objects with the long working distance of 73.5 mm.

Three models in the iNEXIV VMA series are available, each with a different XY-stroke.

**Wide field of view and sharp, clear images**

A wide FOV of up to 13 mm x 10 mm (at 0.35x) allows easy search and alignment of measuring targets. The 10x zoom with five specific steps provides accurate measurement as well as high-resolution images. An excellent Apochromat objective lens with high NA (0.11) and low distortion has been specially designed for the iNEXIV series, providing crisp, clear images.

**Three models with different XY strokes to suit various sample sizes**

250 mm(X) x 200 mm(Y) x 200 mm(Z) – Standard stroke
**iNEXIV VMA-2520**
A space-saving, low-cost model suited to measure small samples, such as electronic and die cast parts.

<table>
<thead>
<tr>
<th>Stroke</th>
<th>250 (X) x 200 (Y) x 200 (Z) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring head</td>
<td>Z direction (single column type)</td>
</tr>
<tr>
<td>Stage travel</td>
<td>X-Y direction</td>
</tr>
</tbody>
</table>

450 mm(X) x 400 mm(Y) x 200 mm(Z) – Middle stroke
**iNEXIV VMA-4540**
Suitable for mid-size samples, such as molded and pressed parts.

<table>
<thead>
<tr>
<th>Stroke</th>
<th>450 (X) x 400 (Y) x 200 (Z) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring head</td>
<td>X-Y direction (bridge type)</td>
</tr>
<tr>
<td>Stage travel</td>
<td>Y direction</td>
</tr>
</tbody>
</table>

650 mm(X) x 550 mm(Y) x 200 mm(Z) – Large stroke
**iNEXIV VMA-6555**
Suitable for large sample and simultaneous measurement of multiple parts.

<table>
<thead>
<tr>
<th>Stroke</th>
<th>650 (X) x 550 (Y) x 200 (Z) mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring head</td>
<td>X-Y direction (bridge type)</td>
</tr>
<tr>
<td>Stage travel</td>
<td>Y direction</td>
</tr>
</tbody>
</table>

**Robust 73.5 mm working distance**

A long working distance minimizes the possibility of contact between the objective lens and valuable samples. Ideal for measuring large step heights and deep holes.

**Large XY stroke and long Z stroke**

Three models with different XY strokes are available: 250 x 200 mm, 450 x 400 mm and 650 x 550 mm. An extended 200 mm Z-axis stroke is perfect for tall samples.
**Features**

**Fast and accurate vision AF (Auto Focus)**
The high-speed vision AF offers high-repeatability and high-precision for height and depth measurement. Non-contact measurement using the vision AF does not damage or deform parts.

Even the bottom of a small hole can be focused.

**Versatile illuminations**
The INEXIV VMA series is equipped with episcopic (top), diascopic (bottom) and 8-segment ring (with 18-degree oblique angle) LED illuminators. Combining these illuminators with superior optics provides accurate detection of low contrast edges.

Any 8-segment light can be selected for effective edge detection.

**Intelligent search**
Even when a sample is misaligned, the system automatically searches the target location based on the target image recorded in a teaching file. This enables accurate, automatic measurement by eliminating possible detection errors.

**Digital chart comparator**
Deviations of contours can be checked by overlaying charts generated digitally from 2D CAD data onto video images. Digital charts always accompany video images.

**Software**

**User-friendly standard software NEXIV AutoMeasure**
NEXIV AutoMeasure, dimensional measurement software for the ever-evolving NEXIV series. Support functions to create measurement programs have been further enhanced, making fast, highly accurate dimensional measurements easier than ever before.

**Graphical user interface to efficiently create programs with intuitive operation and easy-to-understand guide**
Measurement programs can be created by selecting the icon for edge detection and that which should be measured.

**Lighting optimization function**
Automatically optimizes the type of lighting, direction of ring illumination, and light intensity according to features of object measured. Makes it possible to reduce the amount of time and effort spent creating measurement programs.

*Optimizations may not be possible depending on shape of object measured.*

**Intelligent search**
Automatically searches for the target location based on the target image recorded in a teaching file. Enables accurate, automatic measurement by eliminating possible detection errors.

**Automated edge setting function**
Edge detection conditions are automatically set by simply selecting the target edge from an image or profile. This reduces setup time and improves efficiency.

**Teaching navigation**
Simply follow the on-screen instructions and the required measurement settings are entered automatically. Even first-time users can create basic measurement programs.

**Profiler/CAD Reader**
5D profile shape analysis program

**Virtual AutoMeasure**
CAD interface off-line teaching support program

**EDF/Stitching Express (option)**
Image analysis and archiving program for creating an all-in-focus EDF (Extended Depth of Focus) image from multiple images at different height. This also generates a stitched image on the same XY plane.
**Optional Hardware**

**Touch probe for measurement of imperceptible parts**

The iNEXIV VMA series can accommodate optional Renishaw® TP20 or TP200 touch probes. Touch probes provide measurements where vision AF cannot be used, such as the inner diameter of an oil seal or the clearance angle of an indexable insert. Measurement can be easily switched between video and touch probe, and both can be controlled by one teaching file.

**Extended 1.5x high-magnification**

Each model can be modified before shipment to extend the magnification to 1.5x, powerful enough for precise measurement of minute electronic parts.

*Video measuring images are slightly darker with the 1.5x high-magnification option, even with the same light intensity setting (0 - 100).*

**Laser AF**

With a working distance of 63 mm, the optional Laser AF enables height measurement of flat surfaces with high repeatability, while keeping a wide FOV at low magnification.
## Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>VMA-2520</th>
<th>VMA-4540</th>
<th>VMA-6555</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>XYZ Strokes</strong></td>
<td>250×200×200 mm</td>
<td>450×400×200 mm</td>
<td>650×550×200 mm</td>
</tr>
<tr>
<td><strong>Measurement range with TP</strong> (&lt;br&gt;(Touch Probe))</td>
<td>200×200×166 mm (TP20) 200×200×170 mm (TP200) 250×200×200 mm (with Vision AF)</td>
<td>400×400×166 mm (TP20) 400×400×170 mm (TP200) 450×400×200 mm (with Vision AF)</td>
<td>600×550×166 mm (TP20) 600×550×170 mm (TP200) 650×550×200 mm (with Vision AF)</td>
</tr>
<tr>
<td><strong>Minimum readout</strong></td>
<td>0.1 µm</td>
<td>0.1 µm</td>
<td>0.1 µm</td>
</tr>
<tr>
<td><strong>Maximum sample weight</strong></td>
<td>13 kg</td>
<td>40 kg</td>
<td>50 kg</td>
</tr>
<tr>
<td><strong>Maximum sample weight</strong> (&lt;br&gt;([L] = Length in mm))</td>
<td>5 kg</td>
<td>20 kg</td>
<td>30 kg</td>
</tr>
<tr>
<td><strong>Maximum permissible error</strong> (&lt;br&gt;[L] = Measurement length (mm))</td>
<td>EUX.MPE EUY.MPE: 2.8/L/1000 µm EUX.MPE: 3.8/L/1000 µm EUX.MPE*: 3.2/L/50 µm</td>
<td>EUX.MPE EUY.MPE: 2.8/L/1000 µm EUX.MPE: 3.8/L/1000 µm EUX.MPE*: 3.2/L/50 µm</td>
<td>EUX.MPE: 2.8/L/1000 µm EUX.MPE: 3.8/L/1000 µm EUX.MPE*: 3.2/L/50 µm</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>1/3&quot; Black and White CCD, 1/3&quot; Color CCD</td>
<td>1/3&quot; Black and White CCD, 1/3&quot; Color CCD</td>
<td>1/3&quot; Black and White CCD, 1/3&quot; Color CCD</td>
</tr>
<tr>
<td><strong>Working distance</strong></td>
<td>73.5 mm (63 mm with Laser AF)</td>
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<td>73.5 mm (63 mm with Laser AF)</td>
</tr>
<tr>
<td><strong>Magnification</strong></td>
<td>Optical: 0.35 to 3.5x (0.52x to 5.2x high magnification is available as an option)</td>
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</tr>
<tr>
<td><strong>FOV size on stage</strong></td>
<td>13.3x10 mm to 1.33x1 mm (8.9x6.7 mm to 0.89x0.67 mm with high-magnification option)</td>
<td>12.6 to 126x with 24-inch WUXGA (1920×1200 pixels) monitor</td>
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</tr>
<tr>
<td><strong>Autofocus</strong></td>
<td>Vision AF, Laser AF (option)</td>
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</tr>
<tr>
<td><strong>Illumination</strong></td>
<td>Contour illumination and Surface illumination: White LED diascopic illumination Oblique illumination: 8-segment white LED ring illumination</td>
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</tr>
<tr>
<td><strong>Video resolution</strong></td>
<td>640×480 pixels</td>
<td>640×480 pixels</td>
<td>640×480 pixels</td>
</tr>
<tr>
<td><strong>Touch probe (optional)</strong></td>
<td>Renishaw® TP200/TP20</td>
<td>Renishaw® TP200/TP20</td>
<td>Renishaw® TP200/TP20</td>
</tr>
<tr>
<td><strong>Power source</strong></td>
<td>100 V-240 V, 50/60 Hz</td>
<td>100 V-240 V, 50/60 Hz</td>
<td>100 V-240 V, 50/60 Hz</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>5 A (100 V) - 2.5 A (240 V)</td>
<td>5 A (100 V) - 2.5 A (240 V)</td>
<td>5 A (100 V) - 2.5 A (240 V)</td>
</tr>
</tbody>
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**Nikon Corporation Industrial Metrology Business Unit is certified as an ISO/IEC 17025 accredited calibration laboratory for video measuring systems by the IAJapan (International Accreditation Japan) as Accreditation No.JCSS0241. ISO/IEC 17025: International standard, which specifies the general requirements to ensure that a laboratory is competent to carry out specific tests and/or calibrations.

*1: The NEXIV-dedicated MCR20 can be used for both TP20 and TP200. *2: Nikon's in-house test at 20°C ± 0.5k *3: With TP or Laser AF

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**Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. June 2023 ©2014-2023 NIKON CORPORATION**

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**WARNING** TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING THE EQUIPMENT.