



Digital Microscope ShuttlePix P-400R

Digital Microscope

# ShuttlePix

P-400R



A new era of microscopy: "Shuttle style."



# ShuttlePix, a revolutionary portable digital microscope

The ShuttlePix digital microscope represents an all-new one-of-a-kind digital microscope that can be used either as a portable digital camera able to shoot any sample size or dock on a stand where it can take high magnification images and perform various measurements.



## Zoom Camera Head

- Cordless setup enabling image capture in the lab or in the field (Battery-powered with built-in illumination and SD card slot)
- Digital camera-like ease of use



## ShuttlePix

- 20x optical zoom
- 0.2 NA achieves high-resolution image capture
- Scene mode
- 4-segment LED ring light

## Motorized Stand

- Extended Depth-of-Focus (EDF) image capture
- Intuitive stylus and icon-driven operation using dedicated Touch Panel Monitor (advanced image capturing, simple measurement, etc.)
- Dedicated PC software expands operation and possibilities (image processing, 3D/color height-maps, etc.)



## Simple Stand

- All-in-one design not needing a power source\* (simple reflection stand)
- Provides diascopic illumination imaging capabilities (simple diascopic LED stand)
- Quick view feature ensures fast image uploads to your PC

Experience the high performance coming from by Nikon's high quality optics and advanced technologies

## ShuttlePix STYLE

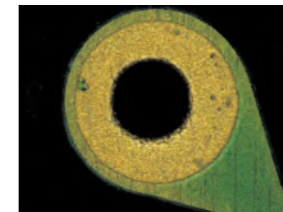


### Compact body with no lens changing 20x optical zoom

When used on the motorized focusing stand and touch panel monitor, this magnification increases to between 20x and 400x. ShuttlePix provides ample magnification range that ensures you never have to switch or purchase different lenses for different magnifications. Magnification information is also linked to ShuttlePix's scale and simple measurement functions.



20x



400x

### High NA / High definition / Wide field of view Maximum optical performance

Nikon's proprietary optics achieve precise observation and imaging with NA up to 0.2 (at 400x magnification) and 20mm-diagonal wide field of view (at 20x magnification). Changing of Resolution Preferred Mode and Depth-of-Focus Preferred Mode is also possible.



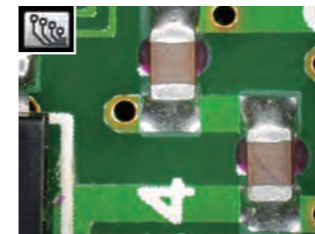
Resolution Preferred



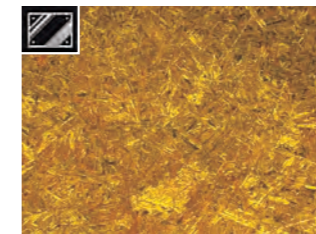
Depth-of-focus Preferred

### Automatic sample-optimized camera settings Scene mode

Ensure optimal settings for image capture through four types of Scene mode: wafer/IC chip, metal, printed circuit board, and flat panel display.



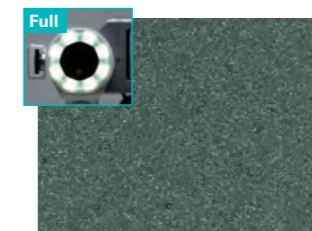
Printed circuit board



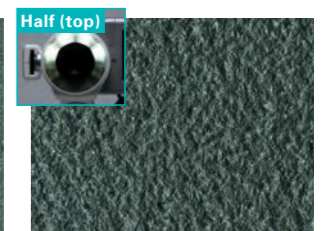
Metal

### Newly-developed design for bright, even illumination 4-segment LED Ring Light

ShuttlePix's new illumination technology achieves consistent brightness at all levels of magnification. Capture shaded images as well, through split-half illumination switchable among top, bottom, left, and right.



Full



Half (top)

Molded Plastic

### From shooting large samples to use in the field Capable of shooting any sample size

ShuttlePix can capture a wide range of images and perform simple measurements. When used like a digital camera, ShuttlePix easily shoots images of any sample size, ideal for the automotive and aerospace sectors. When docked onto the stand, ShuttlePix is perfect for shooting images of electronic components for inspections, analysis or laboratory work.



Aerospace



Energy industry



Forensic science



Archeology



Art objects



Automotive



Production line



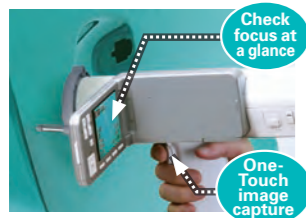
Plant maintenance

## Capture digital microscopy images at any location

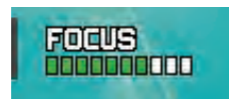
### ZOOM CAMERA HEAD

#### Image capture with the ease of a digital camera Zoom Camera Head

Image capturing with ShuttlePix is simple, with just three steps:  
**1** Hold the Zoom Camera Head in one hand and place against the sample;  
**2** Adjust focus while checking the Focus Indicator;  
**3** Press the capture switch (Trigger). No special knowledge or complicated operations required!  
 The lightweight and ergonomic camera head allows for easy handling for all users.



#### Focus Indicator



Automatically displays luminance value (Focus Index) during image capture



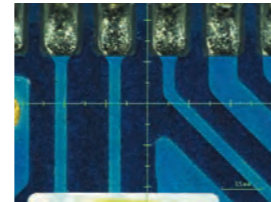
#### Achieving optimal image capture Best shot selection mode

When capturing images, up to 10 continuous frames are recorded and only the optimal shot is kept. This guarantees capturing sharp images even at high magnifications.



#### Scale display (cross hairs, H, grid)

The scale display feature allows for confirmation of a sample or defect's size.



Scale (cross hairs)

## High magnification image capturing and simple measurements anywhere anytime

### with SIMPLE STAND

#### Compact design can be taken anywhere Simple reflection stand

This all-in-one set features battery operated zoom camera head and compact simple reflection stand, both of which can be taken anywhere to capture high-resolution images.

\*When using the LED stand

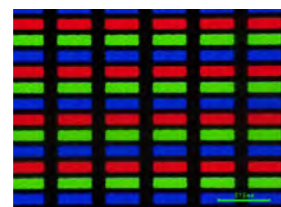


\*When using the diascopic LED stand

#### Provides Diascopic imaging capabilities Diascopic LED stand

The diascopic LED stand is a simple, low-profile, light-weight stand featuring both light and power source.

\*A separate power cable is required for diascopic imaging.



Observing using diascopic LED illumination

#### Automatically upload your image to PC Quick view

The free, dedicated software ShuttlePix Editor (see p.6) can automatically upload images taken with the ShuttlePix to your PC, enabling immediate scroll through thumbnail images and perform simple measurements on selected images right after image capturing.

## High-magnification image measurement (PC-less), EDF image capture

### with MOTORIZED STAND



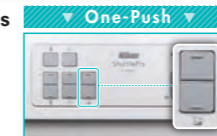
#### Image capture and measurement with intuitive stylus and icon operation Motorized Focusing Stand plus Touch Panel Monitor

ShuttlePix is equipped with a vertical-movement Motorized Focusing Stand and 17", 1280x1024 color LCD Touch Panel Monitor. Through the intuitive operation of touching icons or using the screen stylus, precise image capturing and simple measurement is now possible.

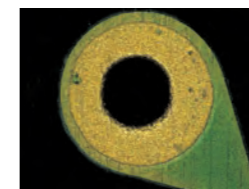


#### Cover a wide range of magnifications without changing lenses 20x optical zoom

Capture images from 20x to 400x magnification using the motorized focusing stand and dedicated touch panel monitor. ShuttlePix provides ample magnification range that ensures you never have to switch or purchase different lenses for different magnifications. Magnification information is also linked to ShuttlePix's scale and simple measurement functions.



20x



400x

#### Perform measurements without a PC Simple measurements

The touch panel monitor makes it possible to perform a truly wide range of simple measurements.



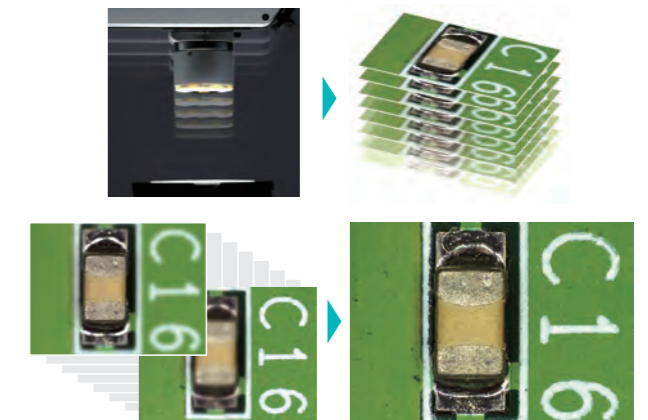
**Measurement function**  
Distance between 2 points, point-to-line distance, distance between center points of 2 circles, angle, circle, area, pitch

**Annotation**  
Count marking, text input, pen drawing, straight line, scale indication, cross-hairs, grid, XY scale, XY measurement

#### PC-less, EDF image capture One-touch EDF



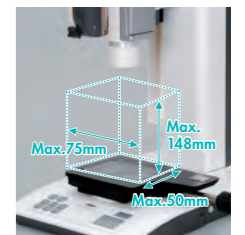
EDF image is easily available by pressing the button at any lower and upper position of the sample on the screen. All operations are performed from the Stand. The addition of a PC and dedicated software further enable 3D display and height display based on EDF data and height data.



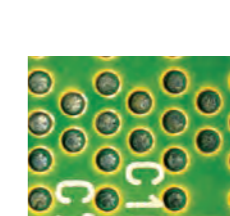
EDF image

#### Stage options for every application Stage lineup

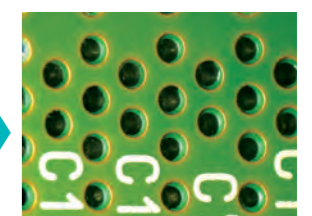
Image capturing for large samples (up to 75mm x 50mm x 148mm) is possible with the Zoom Camera Head and Motorized Focusing Stand. Select from three dedicated Stages matched to the observation sample.



- 1 P-SSL Sliding Stage
- 2 P-STR Tilting Stage
- 3 P-S32 3x2 Stage



Vertical image



Inclination image

Offering even greater compatibility

## Wide range of features using the dedicated software

with PC / SOFTWARE

Free download and registration of software

### ShuttlePix Editor



Conveniently output simple measurements and 3D EDF image or cross-section displays directly into Excel via dedicated ShuttlePix Editor\* software. Software download from the Nikon website and user registration are free.

\*Compatible with Windows XP and Windows 7 (Quick view feature only compatible with Windows® 7)

Speed capture makes it easy to measure right after shooting an image

### Interface

**Zoom camera head set:** Use the zoom head camera's SD card to upload saved images to your PC.

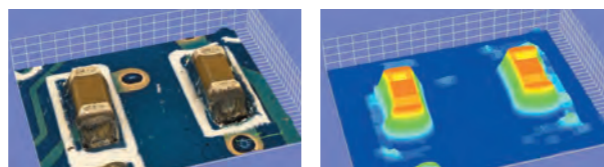
**Motorized focusing stand set:** In addition to SD card, use the USB memory connected to the stand or USB cable to upload saved images to your PC.

**Plain stand set:** In addition to the SD card and USB memory, use the Quick view feature to upload images to your PC automatically.

3D display of EDF images and height data

### 3D display

Use a 3D bird's-eye view to display EDF images and height data taken with ShuttlePix. Rotation, zoom in/out, scale display, color-based heightmaps, and other image display operations are available.



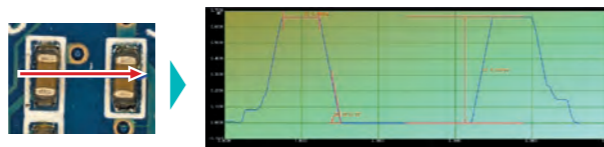
3D display

Color heightmap

Display and simple measurement of height data cross-section

### Cross-section display and simple measurement

Display cross sections at specified positions based on height data embedded in EDF images. Perform simple measurements of the cross section including height, angle, and width, with measurement data displayable and recordable in tabular form.



Original image

Cross section graph

Various measuring performance

### Simple measurement

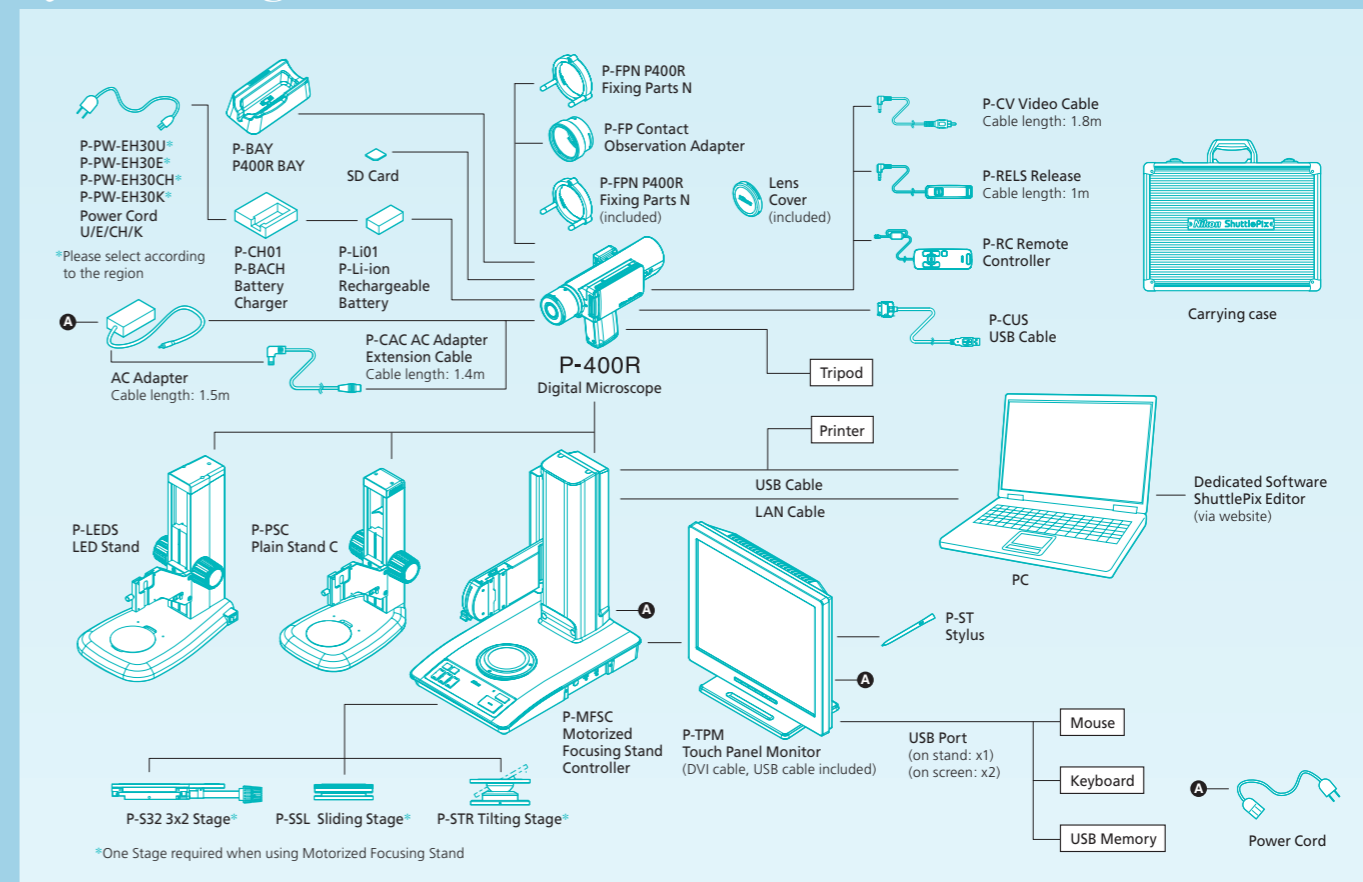
Add comments and markers to key measurements. Measurement results can be output in tabular form.



See <http://www.nikon.com/products/instruments/lineup/digital-microscope/shuttlepix/index.htm> for details and download information regarding ShuttlePix Editor software.

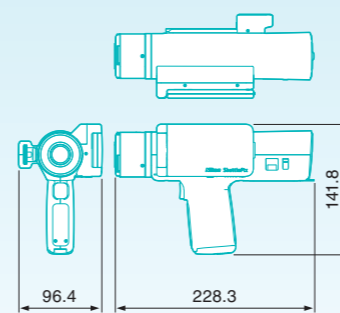
\*Download of ShuttlePix Editor is limited to registered users of the product.

## System Diagram

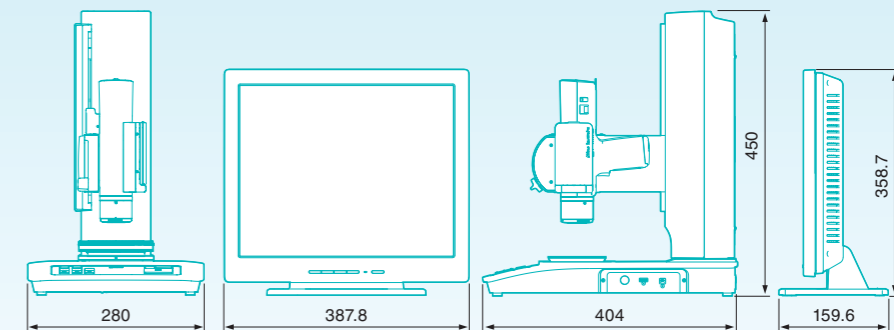


## Dimensions

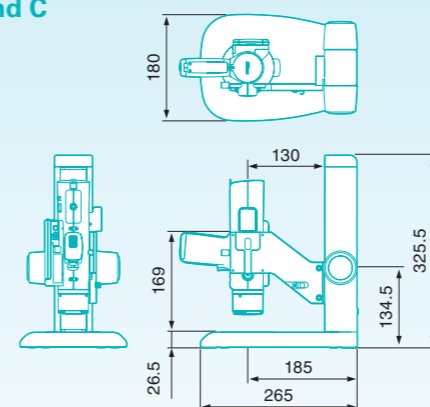
### Zoom Camera Head



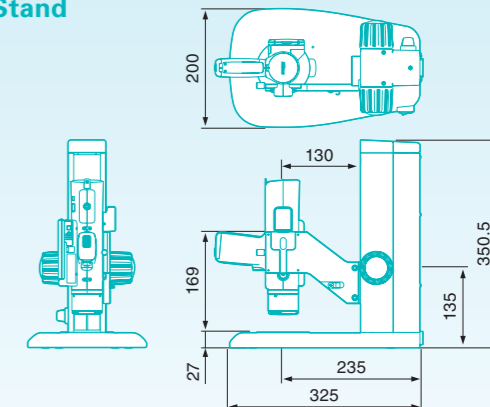
### Motorized Focusing Stand + Touch Panel Monitor



### Plain Stand C



### LED Stand



# Specifications

## Zoom Camera Head (P-400R)

<b>Effective pixels</b>	Approx. 1.98 megapixels
<b>CCD</b>	CCD: 1/1.8" color CCD, total pixels approx. 2.11 megapixels Frame rate: 28fps (selectable 28fps (800x600) or 15fps (1600x1200) when connected to Motorized Focusing Stand)
<b>Optics</b>	Magnification: 3x to 60x (magnification on built-in 2.7" monitor), 20x to 400x (magnification on dedicated 17" monitor), optical zoom ratio = 20:1
<b>Working distance</b>	29mm
<b>FOV</b>	Maximum diagonal field of view 20mm (16mm x 12mm)
<b>Illumination</b>	Light source: White LED Illumination method: Episcopic illumination from around the objective lens Illumination area: ø20mm, 4-segment ring LED (top/bottom/left/right)
<b>Recording</b>	Storage media: SD memory card, SDHC memory card (max. 16GB) (selectable USB memory or FTP when connected to Motorized Focusing Stand) File format: TIFF (non-compressed), JPEG (3 compression levels) Recording pixels: 2M (1600x1200), 0.5M (800x600)
<b>Shooting mode</b>	Scene mode (Standard, Wafer/IC chip, Metal Ceramic, Circuit Board, FPD), BSS (Best Shot Select), timer (2 seconds fixed), interval, 4 custom settings, with focus indicator
<b>Exposure</b>	Photometry method: Average photometry/peak-hold photometry Exposure control: Program AE/shutter preferred/manual exposure Exposure compensation: -2EV to +2EV in 1/3EV steps, camera gain and shutter speed can be set (manual exposure) AE lock function
<b>Aperture</b>	Resolution preferred mode/Depth-of-focus preferred mode

## Motorized Focusing Stand (P-MFSC)

<b>Stroke</b>	Z axis stroke: 150mm (upward 148mm, downward 2mm), upper and lower limit adjustable
<b>Stage</b>	3x2 Stage/Sliding Stage/Tilting Stage
<b>Image Edit</b>	EDF: Still image display, 3D image display (with ShuttlePix Editor) Halation prevention: Live display (max. 5fps, 1280x960, 800x600) High dynamic range: Still image display (1280x960/800x600) Calibration: Zoom magnification conversion/user-registered calibration Measurement function: Distance between 2 points, point-to-line distance, distance between center points of 2 circles, angle, circle, area, pitch Annotation: Count marking, text input, pen drawing, straight line, scale indication, cross-hairs, grid, XY scale, XY measurement
<b>Direct Printing</b>	Supported printer: PictBridge printer

## Touch Panel Monitor (P-TPM)

<b>Display size</b>	17.0" (display area 333.9mm x 270.3mm)
<b>Resolution</b>	SXGA (1280x1024)
<b>Connector</b>	Image input: Digital input: DVI-D SXGA, video input: NTSC composite USB host: USB2.0 A connector x3 USB device: USB2.0 B connector x1

## Plain Stand C (P-PSC)

<b>Dimensions</b>	Approx. 180(W)x265(D)x325.5(H)mm
<b>Stroke</b>	Z axis stroke: 100mm (upward 98mm, downward 2mm),
<b>Size of stage glass</b>	ø90mm
<b>Weight</b>	Approx. 2.5kg

<b>Image compensation</b>	Image quality adjustment: Saturation/hue/contrast/sharpness/color effect Shading correction: Factory setting (switchable On/Off can be switched)
<b>White balance</b>	Manual setting (adjustable red/blue gain can be adjusted)
<b>LCD Monitor</b>	2.7" TFT color LCD, turned off automatically when connected to Motorized Focusing Stand
<b>Image playback</b>	Full-frame view, thumbnail view (9 frames), zoom view (scrollable)
<b>Image deletion</b>	Quick delete, select image delete, folder delete, card format
<b>Video output</b>	NTSC/PAL
<b>Connector</b>	Video output, capture input (ø3.5mm stereo mini jack), dedicated connector for stand
<b>Language</b>	Japanese/English
<b>Power supply</b>	Li-ion Rechargeable Battery/AC adapter/Motorized Focusing Stand (when connected to Motorized Focusing Stand) Battery: P-Li01 P-Li-ion Rechargeable Battery AC adapter: AC adapter EA1050E-120 (optional) Auto power save: 30sec./1min./5min./10min./20min.
<b>Power consumption</b>	24VA
<b>Battery operating time</b>	Approx. 90 minutes (battery life at maximum power consumption with maximum LED brightness)
<b>Charging time</b>	Approx. 4 hours (when no charge remains)
<b>Tripod socket hole</b>	1/4-inch (ISO 1222)
<b>Dimensions</b>	Approx. 96(W)x228(D)x142(H)mm
<b>Weight</b>	Approx. 900g (excluding battery and SD card)
<b>Usage environment</b>	Temperature: 0 to +40°C; Humidity: 60% RH max. (no condensation)

<b>Connector</b>	Camera head IF: for connection to P-400R Video output: DVI-I LAN: 10Base-T/100Base-TX USB host: USB2.0 A connector x2 (for connection to USB mouse/ USB memory/ dedicated monitor) USB device: USB2.0 B connector x1 (for connection to PC)
<b>Language</b>	Japanese/English
<b>Power supply</b>	Built-in, AC100-240V 50/60Hz Auto power save: OFF/1 to 99min.
<b>Power consumption</b>	140VA
<b>Dimensions</b>	Approx. 280(W)x404(D)x450(H)mm
<b>Weight</b>	Approx. 9kg
<b>Usage environment</b>	Temperature: 0 to +40°C; Humidity: 60% RH max. (no condensation)

<b>Power supply</b>	AC100-240V 50/60Hz
<b>Power consumption</b>	140VA
<b>Dimensions</b>	Approx. 390(W)x180(D)x371(H)mm
<b>Weight</b>	Approx. 7kg
<b>Usage environment</b>	Temperature: 0 to +40°C; Humidity: 60% RH max. (no condensation)

## LED Stand (P-LEDS)

<b>Dimensions</b>	Approx. 200(W)x325(D)x350.5(H)mm
<b>Stroke</b>	Z axis stroke: 100mm (upward 98mm, downward 2mm),
<b>Size of stage glass</b>	ø90mm
<b>Weight</b>	Approx. 4.5kg

<http://www.nikon.com/products/instruments/lineup/digital-microscope/shuttlepix/index.htm>

See the URL above for product details and download information regarding ShuttlePix Editor dedicated software.

\*Download of ShuttlePix Editor is limited to registered users of the product.



Received the iF Design Award's Product Design Award 2012

Received the Good Design Award 2011

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. February 2011 ©2010/2012 NIKON CORPORATION

N.B. Export of the products\* in this catalog is controlled under the Japanese Foreign Exchange and Foreign Trade Law. Appropriate export procedures shall be required in case of export from Japan.

\*Products: Hardware and its technical information (including software)



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



### NIKON CORPORATION

Shin-Yurakucho Bldg., 12-1, Yurakucho 1-chome  
Chiyoda-ku, Tokyo 100-8331 Japan  
phone: +81-3-3216-2384 fax: +81-3-3216-2388  
<http://www.nikon.com/instruments/>



ISO 9001 Certified for NIKON CORPORATION Instruments Company



ISO 14001 Certified for NIKON CORPORATION Yokohama Plant

### NIKON METROLOGY, INC.

12701 Grand River Avenue, Brighton, MI 48116 U.S.A.  
phone: +1-810-220-4360 fax: +1-810-220-4300  
E-mail: [sales\\_us@nikonmetrology.com](mailto:sales_us@nikonmetrology.com)  
<http://us.nikonmetrology.com/>  
<http://www.nikoninstruments.com/>

### NIKON METROLOGY EUROPE NV

Geldenaaksebaan 329, 3001 Leuven, Belgium  
phone: +32-16-74-01-00 fax: +32-16-74-01-03  
E-mail: [sales\\_europe@nikonmetrology.com](mailto:sales_europe@nikonmetrology.com)  
<http://www.nikonmetrology.com/>

### NIKON INSTRUMENTS (SHANGHAI) CO., LTD.

CHINA phone: +86-21-6841-2050 fax: +86-21-6841-2060  
(Beijing branch) phone: +86-10-5831-2028 fax: +86-10-5831-2026  
(Guangzhou branch) phone: +86-20-3882-0550 fax: +86-20-3882-0580

### NIKON SINGAPORE PTE LTD.

SINGAPORE phone: +65-6559-3618 fax: +65-6559-3668

### NIKON MALAYSIA SDN. BHD.

MALAYSIA phone: +60-3-7809-3688 fax: +60-3-7809-3633  
NIKON INSTRUMENTS KOREA CO., LTD.  
KOREA phone: +82-2-2186-8400 fax: +82-2-555-4415

### NIKON INDIA PRIVATE LIMITED

INDIA phone: +91-124-4688500 fax: +91-124-4688527

### NIKON CANADA INC.

CANADA phone: +1-905-602-9676 fax: +1-905-602-9953

### NIKON INSTRUMENTS S.p.A.

ITALY phone: +39-055-300-96-01 fax: +39-055-30-09-93

### NIKON AG

SWITZERLAND phone: +41-43-277-28-67 fax: +41-43-277-28-61

### NIKON GMBH AUSTRIA

AUSTRIA phone: +43-1-972-6111-00 fax: +43-1-972-6111-40

### NIKON BELUX

BELGIUM phone: +32-2-705-56-65 fax: +32-2-726-66-45

### NIKON METROLOGY UK LTD.

UNITED KINGDOM phone: +44-1332-811-349 fax: +44-1332-639-881  
E-mail: [sales\\_uk@nikonmetrology.com](mailto:sales_uk@nikonmetrology.com)

### NIKON METROLOGY SARL

FRANCE phone: +33-1-60-86-09-76 fax: +33-1-60-86-57-35

E-mail: [sales\\_france@nikonmetrology.com](mailto:sales_france@nikonmetrology.com)

### NIKON METROLOGY GMBH

GERMANY phone: +49-6023-91733-0 fax: +49-6023-91733-19

E-mail: [sales\\_germany@nikonmetrology.com](mailto:sales_germany@nikonmetrology.com)