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Digital Microscope ShuttlePix P-400R

Digital Microscope

# ShuttlePix

P-400R



A new era of microscopy: "Shuttle style."

# ShuttlePix

P-400R

ShuttlePix, a revolutionary portable digital microscope

## ShuttlePix 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
- 20x optical zoom spans low to high magnification  
(Magnification range of 20x to 400x\*)  
\*on dedicated 17" Touch Panel Monitor
- 0.2 NA (Optical Lens Numerical Aperture) achieves high-resolution image capture



**Suitable for capturing images of large and heavy samples**  
Automotive, Aerospace, Steelmaking, Shipbuilding, etc.

**Ideal for testing, analysis and research**  
Electronic Components, Devices, Assembled Parts, etc.

**ShuttlePix Grab It and Go**

**For wide-range use in the field**  
Plant and Equipment Maintenance, Art Museums, History Museums, Forensic Science, etc.



Aerospace



Energy industry



Forensic science



Archeology



Art objects



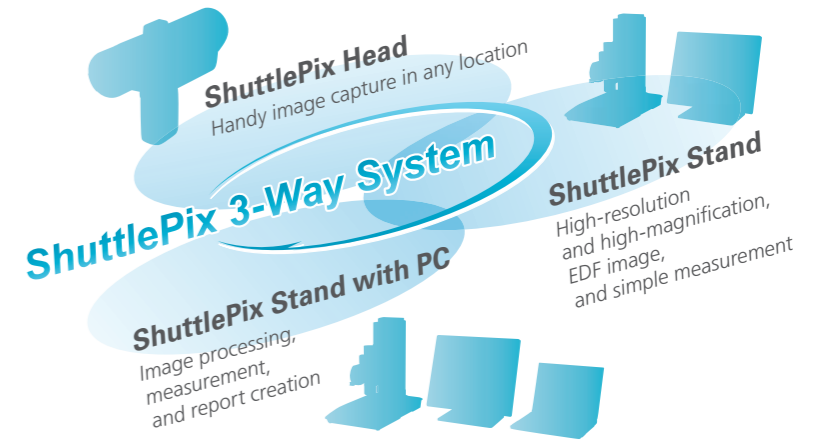
Automotive



Production line



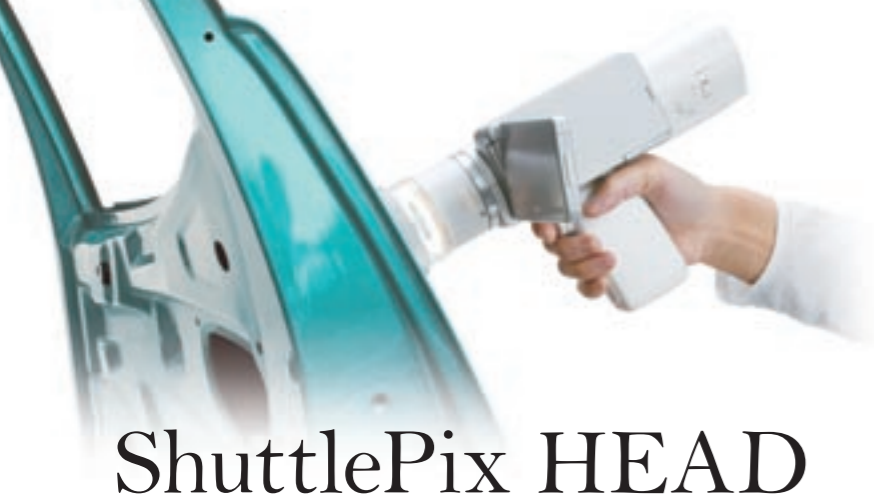
Plant maintenance



## ShuttlePix STAND

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





# ShuttlePix HEAD

Capture digital microscopy images at any location

Handy-Style

Full-featured

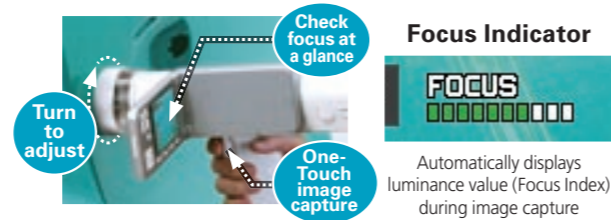


# ShuttlePix STAND

High-magnification image measurement (no PC required),  
Extended Depth-of-Focus image capture

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

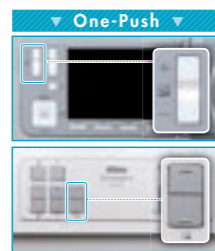
Image capture with ShuttlePix is simple, with just three steps: **1** Hold the Zoom Camera Head in one hand and place against the sample; **2** Adjust focus by turning the Contact Observation Adapter while checking the Focus Indicator; **3** Press the capture switch (Trigger). No special knowledge or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



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

ShuttlePix's observation magnification of 20x to 400x\* spans low to high magnification without the trouble of changing lenses. Magnification information is linked to scale functions and simple measurement functions.

\* Magnification on dedicated monitor used with Motorized Focusing Stand.



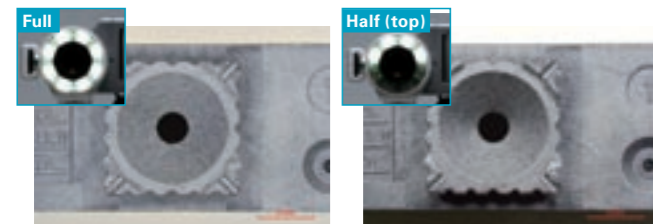
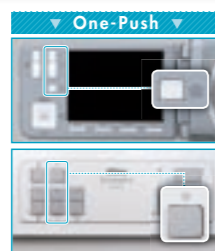
20x



400x

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

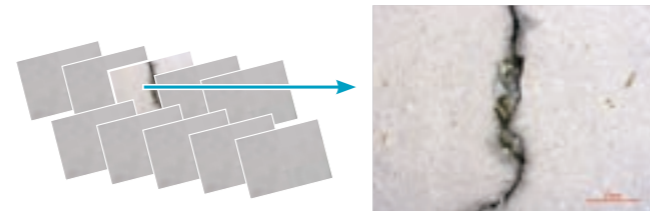
ShuttlePix's new illumination technology achieves consistent brightness at all levels of magnification. Capture shaded images as well, through split-half illumination switchable among top, bottom, left, and right.



Full illumination yields bright, evenly-lit images, while half illumination enables images with shadows.

## 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.



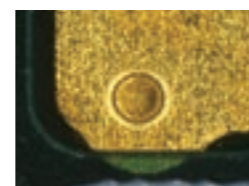
The image with sharpest focus is kept from among continuously captured images.

## 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

## 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 capture and simple measurement are effortless and convenient.



## Easy, icon-driven GUI User interface

The Zoom Camera Head's GUI uses the same icons as Nikon's COOLPIX compact digital cameras. The Motorized Focusing Stand and Touch Panel Monitor also employ visual design that makes features clear instantly.



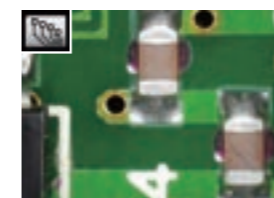
Zoom Camera Head GUI (close-up)



Motorized Focusing Stand GUI icons (close-up)

## 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.



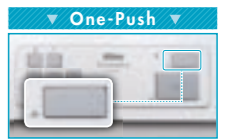
Printed circuit board



Metal

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

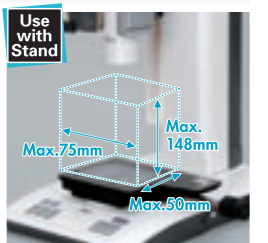
EDF image is easily available by pressing the button at any lower and upper position of the sample on the screen. All operations are performed from the Stand. The addition of a PC and dedicated software further enable 3D display and height display based on EDF data and height data.



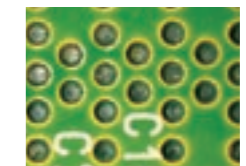
EDF image

## Stage options for every application Stage Lineup

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



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



Vertical image



Slanted image



# ShuttlePix STAND with PC

Unlock a Wide Range of Features Using the Dedicated Software

## Free download and registration of software ShuttlePix Editor

Conveniently output simple measurements and EDF image 3D 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

## Various measuring performance Simple measurement

Add comments and markers to key measurements such as distance, angle, and area. Measurement results can be output in tabular form.

2 Point Distance

Point to Line Distance

Circle Distance

Pitch Distance

Diameter

Radius

Angle (3 Points)

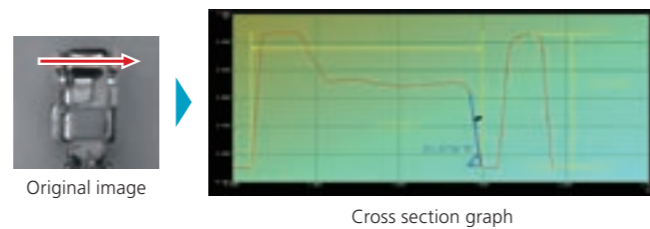
Angle (4 Points)

Polygon

ID	Symbol	Length1	Length2	Angle
1	Horizontal	1.3787	2.3910	
2	Vertical Ru...	0.9529		
3	Angle Ruler			42°53'37"

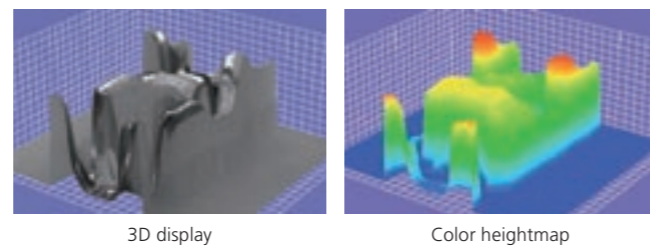
## Display and simple measurement of height data cross-section Cross-section display and simple measurement

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.

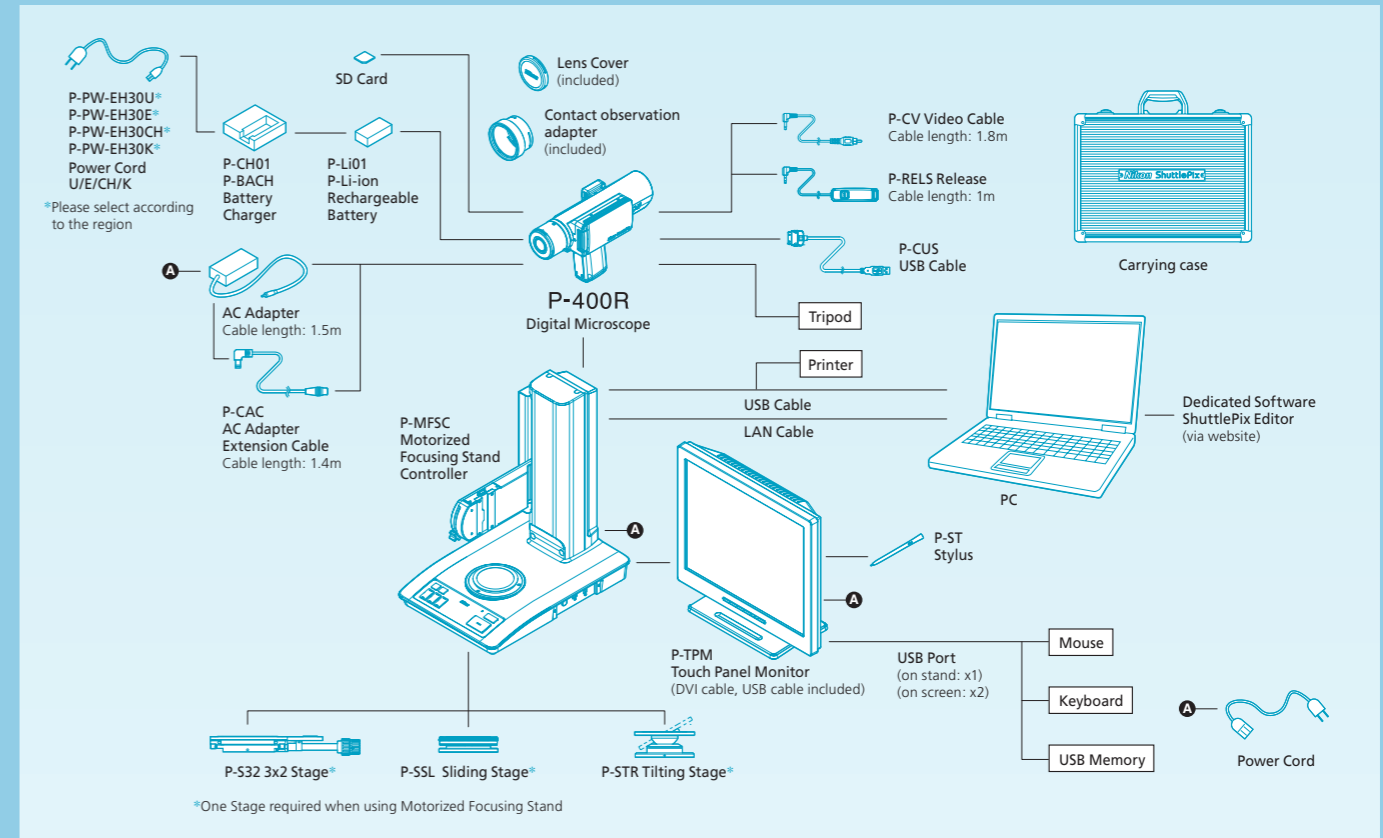


## 3D display of EDF images and height data 3D display

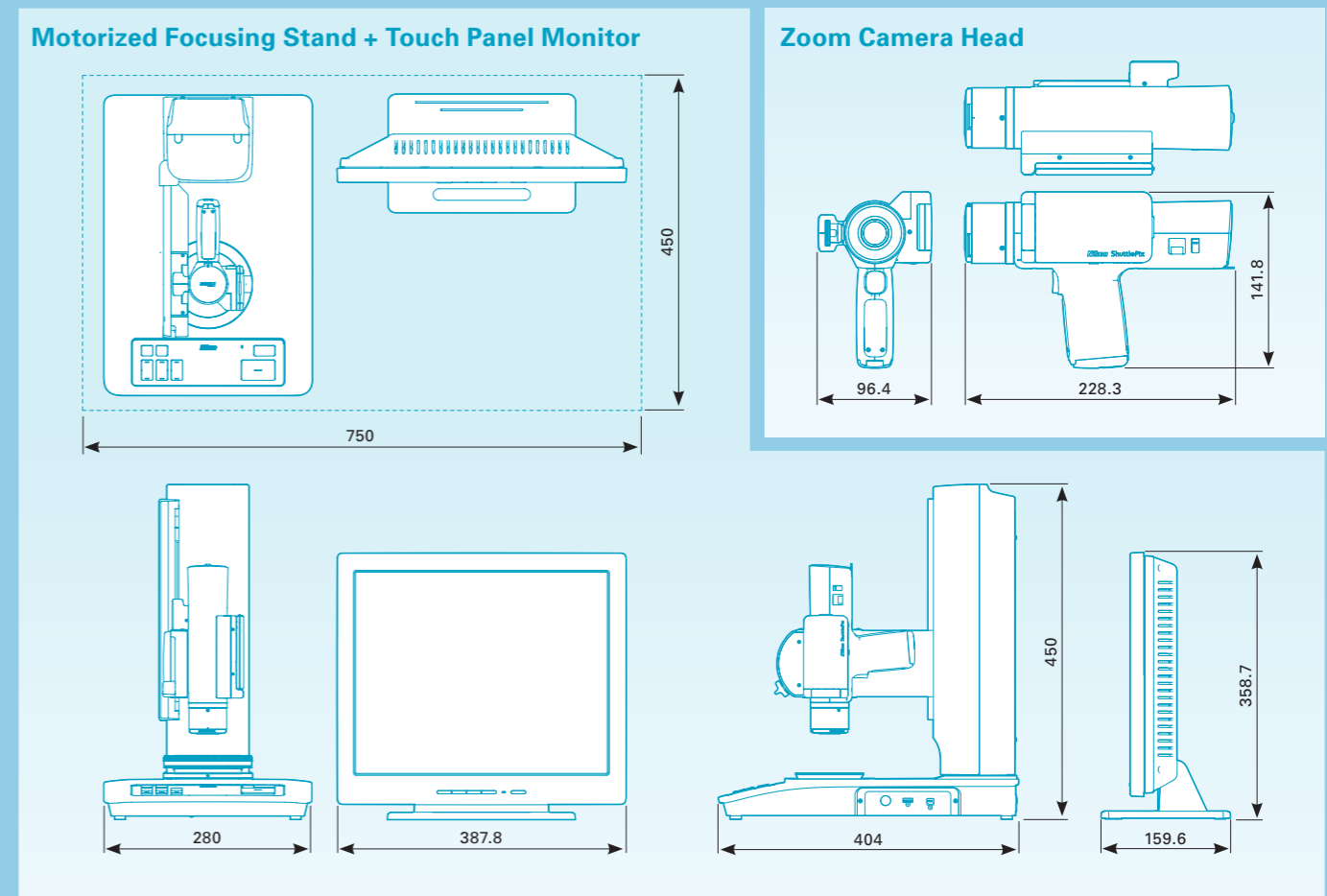
Use a 3D bird's-eye view to display EDF images and height data taken with ShuttlePix. Rotation, zoom in/out, scale display, color-based heightmaps, and other image display operations are available.



# System Diagram



# Dimensions



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.

# 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 setting, 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 can be adjusted
<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

<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 by 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)x142(H)x228(D)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)x450(H)x404(D)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)x371(H)x180(D)mm
<b>Weight</b>	Approx. 7kg
<b>Usage environment</b>	Temperature: 0 to +40°C Humidity: 60% RH max. (no condensation)

<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.

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

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

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

 <b>WARNING</b>	TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING THE EQUIPMENT.
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