Digital Microscope

ShuttlePix

P-400Rv

A new era of microscopy: "Shuttle style."

ShuttlePix
P-400Rv

ShuttlePix, a revolutionary portable digital microscope

The ShuttlePix digital microscope is an all-new, one-of-a-kind digital microscope that can be used as a docked device, for high magnification and various measurements, or as a portable digital camera, for capturing any sample sizes.

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

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.)

ShuttlePix

- 20x optical zoom
- High-resolution image capture
- Scene mode
- 4-segment LED ring light

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
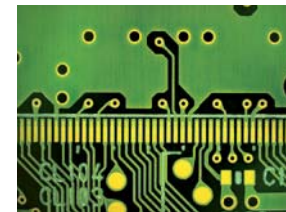- Easy navigation with the Remote Control

Experience the high performance by Nikon's high quality optics and advanced technologies
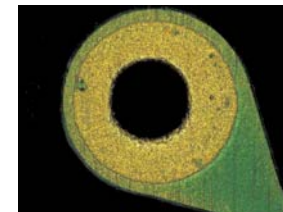
ShuttlePix STYLE

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.
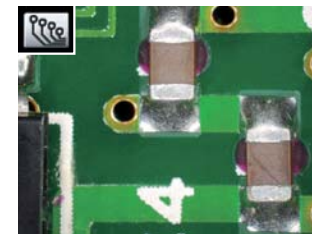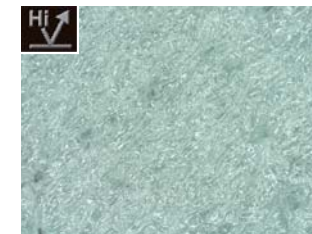
20x   400x

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 five types of scene mode: wafer/IC chip, metal, printed circuit board, flat panel display, and high-reflection sample.

Printed circuit board   High-reflection sample (polyethylene form)

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)
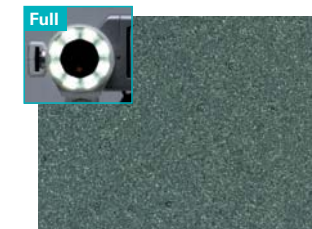
Molded plastic
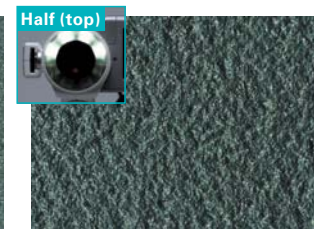
From shooting large samples to use in the field
Capable of shooting any sample size

The Handy can observe samples of all sizes, such as inspections of art displays to automotives. Use of the stand allows for abrasion observation of electronic and aircraft parts. With the built-in battery, cable-less operation is possible.

Aerospace   Energy industry   Forensic science   Archeology

Art objects   Automotive   Production line   Plant maintenance

High-resolution, all-focused image capturing is possible without PC

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 a 17", 1280×1024 color LCD Touch Panel Monitor. Through the intuitive operation of touching icons or using the screen stylus, precise image capturing and simple measurement are now possible.

CAPT | E.ZOOM | WHT.B
WB
image capture | zoom | color correction
etc.

Easy capturing of all-focused images
One-touch EDF

▼ One-Push ▼

EDF images can be captured simply by operating the button located on the stand.

1

Start at bottom focus point

2

End at top focus point

EDF image
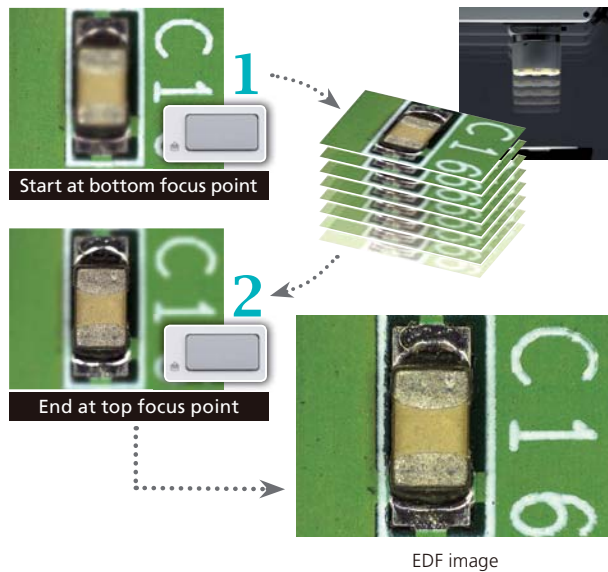
Perform measurements without a PC
Simple measurements

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

### Stage options for every application
Stage lineup

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

Max. 75mm
Max. 148mm
Max. 50mm
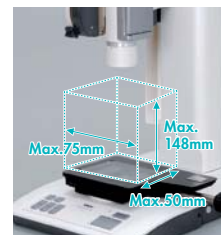
1 P-SSL Sliding Stage
2 P-STR Tilting Stage
3 P-S32 3x2 Stage

Quick 3D view

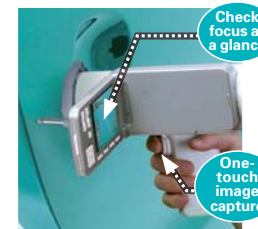Captured images are simultaneously transmitted to the Shuttle Pix Editor, where 3D images can be viewed.

3D image   Heightmap image

Vertical image   Inclination image
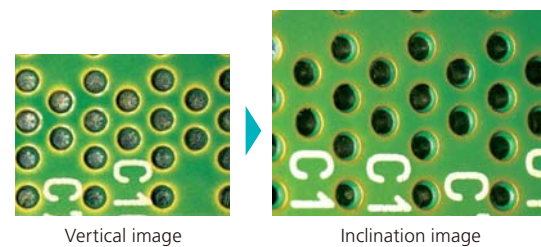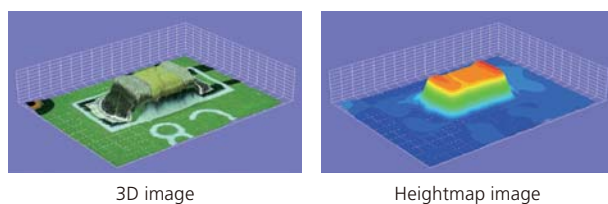
Capture digital microscopy images at any location

ZOOM CAMERA HEAD

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

Image capturing is simple, with the use of the capture switch (trigger). The lightweight and ergonomic camera head allows for easy handling for all users. Voice recording is now available as a new function.

Check focus at a glance

One-touch image capture

Scale display
(cross hairs, H, grid)

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

Scale (cross hairs)

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.

▼ One-Push ▼
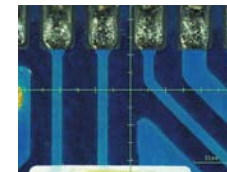
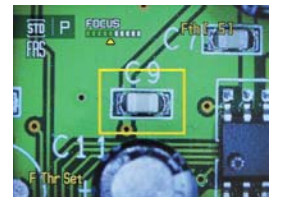### Focus assist capture function

(scheduled release in August 2013)

During Preview Mode, images will be automatically captured at the optimum focus point.

High magnification image capturing and simple measurements anywhere anytime

with SIMPLE STAND

Stands tailored to the purpose of use
Simple reflection/ Diascopic LED stand

An all-in-one compact reflector stand with a battery operated Zoom Camera Head and a Diascopic LED Stand capable of diascopic observation are both available.

*When using the Diascopic LED Stand
(Power cable is needed separately)

Easy operations at hand
Remote Controller

Image capturing, zooming, brightness adjustment, and illumination angles, can all be controlled. Stable operation is possible even when using Zoom Camera Head.

1 Zoom
2 Light amount
3 Capture
4 Illumination angle
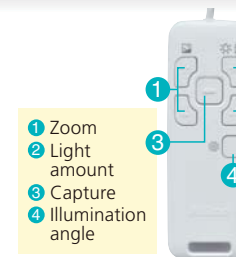
Automatically upload your images to PC
Quick view

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

Wide range of features using the dedicated software

with PC / SOFTWARE

≡ Free download and registration of software
≡ ShuttlePix Editor

Conveniently outputs simple measurements and 3D EDF images 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.

≡ Various measuring performance
≡ Simple measurement

Add comments and markers to key measurements. 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 |

≡ 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.
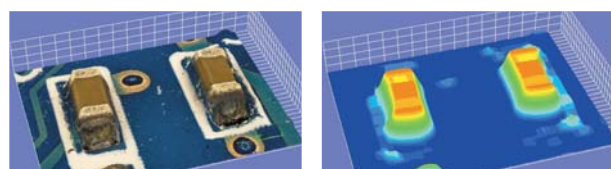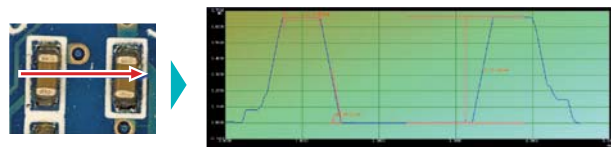
3D display   Color heightmap

≡ 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.
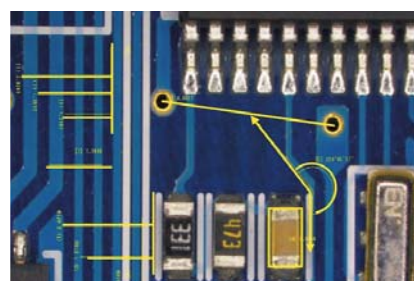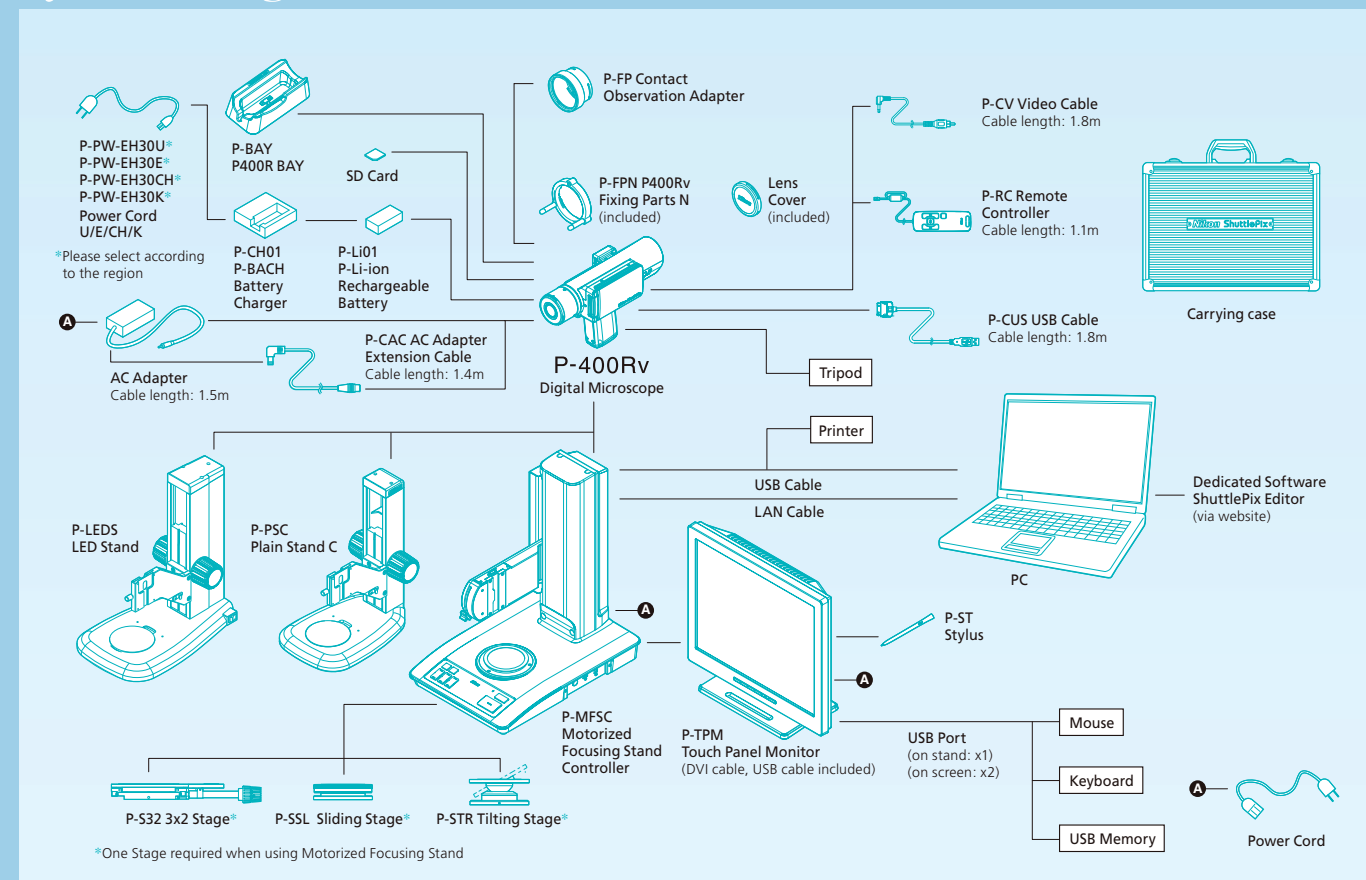
Original image   Cross section graph

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

P-PW-EH30U*
P-PW-EH30E*
P-PW-EH30CH*
P-PW-EH30K*
Power Cord
U/E/CH/K

*Please select according to the region

P-BAY
P400R BAY

SD Card

P-CH01
P-BACH
Battery Charger

P-Li01
P-Li-ion
Rechargeable Battery

P-FP Contact
Observation Adapter

P-FPN P400Rv
Fixing Parts N
(included)

Lens Cover
(included)

P-CV Video Cable
Cable length: 1.8m

P-RC Remote Controller
Cable length: 1.1m

Carrying case

A AC Adapter
Cable length: 1.5m

P-CAC AC Adapter
Extension Cable
Cable length: 1.4m

P-400Rv
Digital Microscope

P-CUS USB Cable
Cable length: 1.8m

Tripod

Printer

USB Cable

LAN Cable

Dedicated Software
ShuttlePix Editor
(via website)

PC

P-LEDS
LED Stand

P-PSC
Plain Stand C

A

P-ST
Stylus

A

P-S32 3x2 Stage*

P-SSL Sliding Stage*

P-STR Tilting Stage*

P-MFSC
Motorized
Focusing Stand
Controller

P-TPM
Touch Panel Monitor
(DVI cable, USB cable included)

USB Port
(on stand: x1)
(on screen: x2)

Mouse

Keyboard

USB Memory

A Power Cord

*One Stage required when using Motorized Focusing Stand

Dimensions

| Zoom Camera Head | Motorized Focusing Stand + Touch Panel Monitor |
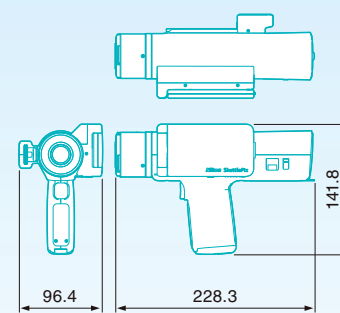
Zoom Camera Head: 141.8, 96.4, 228.3

Motorized Focusing Stand + Touch Panel Monitor: 450, 358.7, 280, 387.8, 404, 159.6

| Plain Stand C | | LED Stand |

Plain Stand C: 180, 169, 26.5, 185, 265, 325.5, 134.5

Remote Controller: 1100, 114.5, 40, 17.7

LED Stand: 200, 130, 169, 27, 350.5, 135, 235, 325
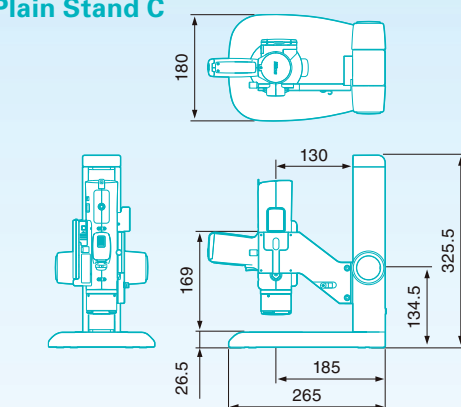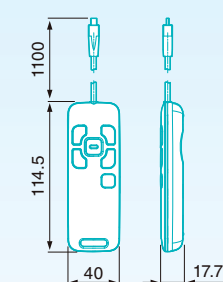
Specifications

Zoom Camera Head (P-400Rv)

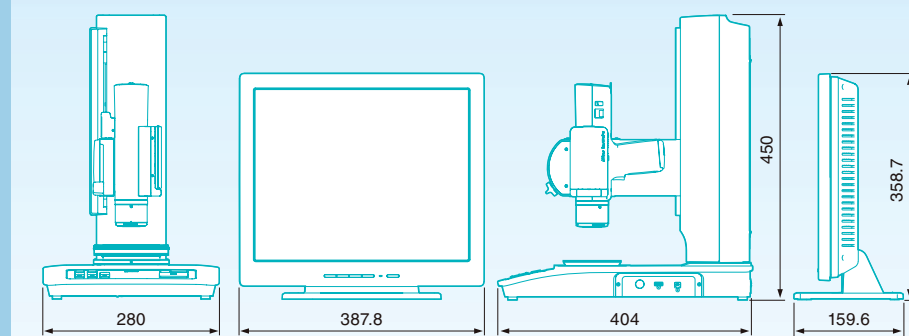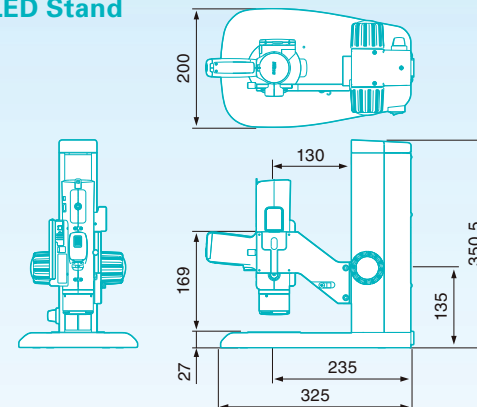|	
Effective pixels	Approx. 2 megapixels
CCD	CCD: 1/1.8" color CCD, total pixels approx. 2.11 megapixels
	Frame rate: 28fps (selectable 28fps (800×600) or 15fps (1600×1200) when connected to Motorized Focusing Stand)
Optics	Magnification: 3× to 60× (magnification on built-in 2.7" monitor), 20× to 400× (magnification on dedicated 17" monitor), optical zoom ratio = 20:1
Working distance	29mm
FOV	Maximum diagonal field of view 20mm (16mm x 12mm)
Illumination	Light source: White LED
	Illumination method: Episcopic illumination from around the objective lens
	Illumination area: ø20mm, 4-segment ring LED (top/bottom/left/right)
Recording	Storage media: SD memory card, SDHC memory card (max. 16GB) (selectable USB memory or FTP when connected to Motorized Focusing Stand)
	Image file format: TIFF (non-compressed), JPEG (3 compression levels)
	Audio file format: WAV (voice memo)
	Recording pixels: 2M (1600×1200), 0.5M (800×600)
Shooting mode	Scene mode (standard, wafer/ IC chip, metal ceramic, circuit board, FPD, high-reflection sample*), BSS (Best Shot Select), timer (2 seconds fixed), interval, 4 custom settings, Focus assist capture function* (scheduled release in August 2013)
Exposure	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
Aperture	Resolution preferred mode/Depth-of-focus preferred mode

Image compensation	Image quality adjustment: Saturation/hue/contrast/sharpness/color effect
	Shading correction: Factory setting (switchable On/Off can be switched)
White balance	Manual setting (adjustable red/blue gain can be adjusted)
LCD Monitor	2.7" TFT color LCD, turned off automatically when connected to Motorized Focusing Stand
Image playback	Full-frame view, thumbnail view (9 frames), zoom view (scrollable)
Image deletion	Quick delete, select image delete, folder delete, card format
Video output	NTSC/PAL
Connector	Video output, capture input (ø3.5mm stereo mini jack), dedicated connector for stand, external remote controller input
Language	Japanese/English
Power supply	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.
Power consumption	24VA
Battery operating time	Approx. 90 minutes (battery life at maximum power consumption with maximum LED brightness)
Charging time	Approx. 4 hours (when no charge remains)
Tripod socket hole	1/4-inch (ISO 1222)
Dimensions	Approx. 96(W)×228(D)×142(H)mm
Weight	Approx. 1kg (excluding battery and SD card)
Usage environment	Temperature: 0 to +40℃; Humidity: 60% RH max. (no condensation)

*Zoom camera head, "P-400R", can also be used by downloading the firmware from the Nikon Website

Motorized Focusing Stand (P-MFSC)

Stroke	Z axis stroke: 150mm (upward 148mm, downward 2mm), upper and lower limit adjustable
Stage	3×2 Stage/Sliding Stage/Tilting Stage
Image Edit	EDF: Still image display, 3D image display (with ShuttlePix Editor)
	Halation prevention: Live display (max. 5fps, 1280×960, 800×600)
	High dynamic range: Still image display (1280×960/800×600)
	Calibration: Zoom magnification conversion/user-registerd 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
Direct Printing	Supported printer: PictBridge printer

Connector	Camera head IF: for connection to P-400Rv
	Video output: DVI-I
	LAN: 10Base-T/100Base–TX
	USB host: USB2.0 A connector×2 (for connection to USB mouse/ USB memory/ dedicated monitor)
	USB device: USB2.0 B connector×1 (for connection to PC)
Language	Japanese/English
Power supply	Built-in, AC100-240V 50/60Hz
	Auto power save: OFF/1 to 99min.
Power consumption	140VA
Dimensions	Approx. 280(W)×404(D)×450(H)mm
Weight	Approx. 9kg
Usage environment	Temperature: 0 to +40℃; Humidity: 60% RH max. (no condensation)

Touch Panel Monitor (P-TPM)

Display size	17.0" (display area 333.9mm×270.3mm)
Resolution	SXGA (1280×1024)
Connector	Image input: Digital input: DVI-D SXGA, video input: NTSC composite
	USB host: USB2.0 A connector×3
	USB device: USB2.0 B connector×1

Power supply	AC100-240V 50/60Hz
Power consumption	140VA
Dimensions	Approx. 390(W)×180(D)×371(H)mm
Weight	Approx. 7kg
Usage environment	Temperature: 0 to +40℃; Humidity: 60% RH max. (no condensation)

Plain Stand C (P-PSC)

Dimensions	Approx. 180(W)×265(D)×325.5(H)mm
Stroke	Z axis stroke: 100mm (upward 98mm, downward 2mm),
Size of stage glass	ø90mm
Weight	Approx. 2.5kg

LED Stand (P-LEDS)

Dimensions	Approx. 200(W)×325(D)×350.5(H)mm
Stroke	Z axis stroke: 100mm (upward 98mm, downward 2mm),
Size of stage glass	ø90mm
Weight	Approx. 4.5kg

iF product design award 2012 ■
Received the iF Design Award's Product Design Award 2012
Received the Good Design Award 2011

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

Nikon

ISO 9001 BUREAU VERITAS Certification
ISO 9001 Certified for NIKON CORPORATION Microscope Solutions Business Unit Industrial Metrology Business Unit

ISO 14001 BUREAU VERITAS Certification
ISO 14001 Certified for NIKON CORPORATION

UKAS MANAGEMENT SYSTEMS 008

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