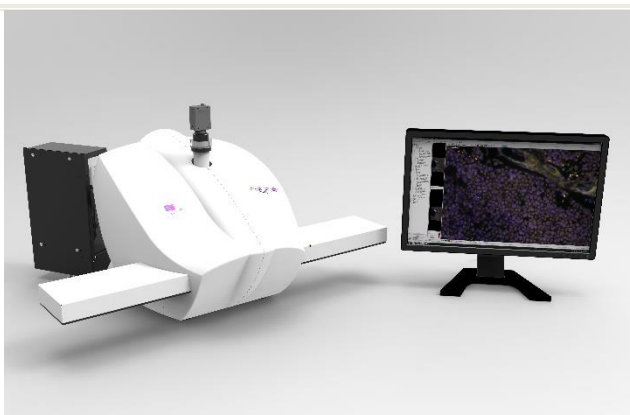


Pannoramic digital slide scanners

Product specification sheet

Pannoramic MIDI II

12-slide digital slide scanner
 World class brightfield and fluorescent whole slide scanning
 Compact fluorescent scanning
 Small footprint and dimensions
 Low maintenance
 Simple and easy use



Common characteristics:

- Wideband Multichannel RGB LED light source **for brightfield operation**
- **High-end fluorescent (FL)** illumination engine
- **9-channel FL scanning** with 9 individual, software controlled FL filter positions
- **Multiband FL filter** support
- High-resolution scanner **imaging optics**
- **12 slides** fully automatic loading and scanning
- Automated **tissue detection** and automated **coverslip detection**
- Outstanding 0.09 $\mu\text{m}/\text{pixel}$ resolution is achieved with the 40 $\times$ /0.95 NA (equivalent to 110 $\times$ magnification) objective
- **Multilayer (Z-stack)** scanning (optional)
- **Extended Focus** scanning (optional)
- 1D and 2D **barcode reading**
- **Scan method:** area scanning with autofocus

Acceptable **slide format** (Pannoramic MIDI II):

Slide	Cover slip
Length: 75.0 to 76.2 mm Width: 25.0 to 26.0 mm Thickness: 0.9 to 1.2 mm – 45° beveled or 90° corners – Grounded or cut edges – Recommended: Colored area for placement of barcode stickers	Length: max. 50 mm Width: max. 48 mm (recommended: 44 mm) Thickness: No. 1 and 1.5 (0.13 to 0.16 mm and 0.16 to 0.19 mm, respectively)

Detailed technical specification

Pannoramic MIDI II

Dimensions (width x depth x height)	
Pannoramic MIDI II Base Unit	approx. 900 mm x 500 mm x 500 mm
Pannoramic MIDI II Control Unit	approx. 186 mm x 481 mm x 430 mm
1920x1200 Display (24") (not included)	approx. 559 mm x 204 mm x 384 mm
Power supply Unit (24 V)	approx. 189 mm x 90 mm x 44 mm
Weight	
Pannoramic MIDI II Base Unit	approx. 23 kg
Pannoramic MIDI II Base Unit with fluorescent option	approx. 26 kg
Pannoramic MIDI II Control Unit	approx. 18 kg
Display (24") (not included)	approx. 7,1 kg
Power supply unit (24 V)	approx. 550 g
Ambient conditions	
Transportation / Shipment (packed)	
Permissible ambient temperature	-40 °C to +70 °C
Storage	
Permissible ambient temperature	0 °C to +60 °C
Permissible relative air humidity (non-condensing)	25- 75 %
Operation	
Permissible ambient temperature	+10 °C to +35 °C
Permissible relative air humidity	max. 75 % at 35 °C
Altitude of place of installation	max. 2000 m
Air pressure	70 to 110 kPa
Degree of pollution	2
Operating Data	
Category of operating environment	closed room facilities
Protection class	I
Degree of protection	IP 20
Electrical safety	under IEC 61010-1:2010+AMD1:2016, IEC 61010-2-081:2015, IEC 61010-2-101:2015
Electromechanical compatibility	IEC 61326-2-6:2012
Over-voltage category	II
Radio interference suppression	under EN 55011 class B
Noise immunity	uin accordance with EN 61326-2-6:2012
Base unit input voltage	24 V DC $\pm$ 1 V
Power consumption (MIDI II Base Unit)	60 VA
Power Supply Unit (24 V)	
Category of operating environment	closed room facilities
Protection class	I
Degree of protection	IP 20
Input voltage	100 to 240 V AC
Input frequency	50 / 60 Hz
Power consumption	max. 50 VA
Secondary voltage	24 V DC
Secondary current	max. 4.8 A
Fusing	2 x T 2,5 A / H, 250 V, 5 x 20 mm
Light sources	

Multichannel RGB LED light source (transmitted light operation)	3DHISTECH Wideband RGB light
Average lifetime performance of RGB LED	~30 000 h
RGB fluorescent light source (default)	Lumencor SOLA SM II solid state light engine
Spectral bands	350 – 680 nm
Power consumption of Lumencor SOLA SM II light engine	120 W
Average lifetime of Lumencor SOLA SM II light engine	~ 20 000 h
Advanced fluorescent light source (optional)	Lumencor SPECTRA 6 solid state light engine
Channel switching speed	~ 10 μ s
Spectral bands	380 – 740 nm, NIR upon request
Power consumption of Lumencor Spectra 6 light engine	120 W
Average lifetime of Lumencor Spectra 6 light engine	> 20 000 h
Software	
Pannoramic MIDI II Control Software	included by the Pannoramic MIDI II System
Case Viewer – Digital Microscopy Software Application	included by the Pannoramic MIDI II System
Slide capacity & loading	
Slide capacity	12 (slide tray for 12 slides)
Wet slide handling	Yes
Slide loading	Automatic
Available objectives	
20x/0.8 NA	(1 st objective, default)
40x/0.95 NA	(2 nd objective, optional)
Number of supported objectives	2 (dual)
Motorized objective changer	Yes, for 2 objectives
Identification of slides / Barcode reading	
Identification of slides via preview camera (VRmC-8+ Pro): Storage of barcode area as image and interpretation of barcode label as character string; the following 1D and 2D barcode types can be interpreted: 1D barcodes: • Code39 (ASCII encoding) • Code128 (UCC/EAN128) (ASCII encoding) • Code 16K • Interleaved 2 of 5 • Standard 2 of 5 • IATA 2 of 5 • Matrix 2 of 5 • Telepen • Code93 (ASCII encoding) • Code 11 • MSI • Codabar • Patch Code • Pharmacode • EAN-13 (Numeric encoding) • EAN-8 (Numeric encoding) • UPC-A (Numeric encoding) • UPC-E	

2D barcodes:

- Aztec
- Data Matrix (Numeric encoding, Alpha encoding, AlphaNumericPunc encoding, AlphaNumeric encoding, ASCII encoding, ISO8 encoding)
- Micro QR
- Maxicode (Encoding mode 2, 3, 4, 5, 6)
- MicroPDF417 (Standard encoding type)
- PDF417 (Standard encoding type)
- QR (QR code Model 1, 2 encoding)

Recognition of tissue area

Via the USB preview camera (VRmC-8+ Pro) with automatic threshold	
Exclusion of cover glass	Automatic
Remove of specks from digitization	User selectable
Scan inside marker (selectable)	Only areas encircled by marker pen will be scanned
Multiple tissue areas selectable / recognized automated	Yes

Image digitization

5 MP high performance CMOS digital imaging camera (for brightfield and fluorescence) (default)	Global Shutter CMOS (Sony IMX250)
Pixel size	3.45 μm x 3.45 μm
Camera resolution	2448 x 2048 pixel
Digital slide image resolution:	
Pixel resolution with 20x objective and C-mount adapter 0.63x	0.27 μm / 40x 0.17 μm / 60x
Pixel resolution with 20x objective and C-mount adapter 1x	0.14 μm / 75x 0.09 μm / 110x
Pixel resolution with 40x objective and C-mount adapter 0.63x	USB 3.0
Pixel resolution with 40x objective and C-mount adapter 1x	13.3 x 13.3 mm monochrome sCMOS (CIS2020) sensor
Connection type	
4.2 MP Scientific CMOS digital imaging camera (for brightfield and fluorescence) (optional)	
Pixel size	6.5 μm x 6.5 μm
Sensor resolution	2048 x 2048 active pixel
Bit-depth	16 bit
Pixel resolution with 20x objective and C-mount adapter 1x	0.33 μm / 30x
Pixel resolution with 20x objective and C-mount adapter 1.6x	0.20 μm / 50x
Pixel resolution with 40x objective and C-mount adapter 1x	0.16 μm / 60x
Pixel resolution with 20x objective and C-mount adapter 1.6x	0.10 μm / 100x
Cooling	Peltier element with forced air
Connection	Dual CameraLink

4.2 MP Scientific CMOS Back Illumination digital imaging camera (for brightfield and fluorescence)

(optional)

Pixel size	6.5 μm x 6.5 μm
Sensor resolution	2048 x 2048 active pixel
Bit-depth	16 bit
Pixel resolution with 20x objective and C-mount adapter 1x	0.33 μm / 30x
Pixel resolution with 40x objective and C-mount adapter 1x	0.16 μm / 60x
Cooling	Peltier element with forced air
Connection	USB 3.0

Scanning speed (brightfield, 20x objective, 15 mm x 15 mm)

0.27 μm / pixel (0.63x camera adapter, 5MP high perf. CMOS)	2 min 30 sec
0.17 μm / pixel (1.0x camera adapter, 5MP high perf. CMOS)	4 min 30 sec
0.33 μm / pixel (1.0x camera adapter, 4.2MP Scientific CMOS)	3 min

Fluorescent scan option

Nr of recordable fluorescent channels	45
Fluorescent filter positions	9
Fluorescent filter selection	Automatic
Multiband filter support	Yes, in case of „Advanced fluorescent light source”
Software-aided flat-field correction compensation method	Yes

Digital slide properties

Digital slide format	.MRXS
Image type	.JPG, .BMP, .PNG
Slide export	DICOM, .MRXS, .TIFF, .MetaXML
Slide import	From: • TIFF • .SVS (Aperio digital slides excluding JPEG2000 type) • .NDP (Hamamatsu digital slides)

Control Unit and required system resources

CPU	Intel Xeon W-2245 8 Cores / 16 Thread or similar
RAM	Min 64 GB
Hard Disk (SSD) for OS	256 GB
Hard Disk (HDD) for data	2x 1TB
Graphics Output	1x DVI (1920x1200), 2x DisplayPort (4096x2304)
Ports	4x USB 3.0 6x USB 2.0 10/100/1000 Ethernet CameraLink (optional)
Input units	keyboard, mouse
Operating System	Windows 10 Pro (64)
Zero Noise function	
System management	Intel® vPro™ technology, DeskView
Green technology	manageability suite

Digital Slide Storage	
Scan to local network (Slide Server not included)	Yes
Scan to cloud infrastructure (Slide Server not included)	Yes
Scan to local Hard Drive	Yes
Scanner features	
Scanning with selectable magnification	Yes
Scan progress indication on the preview image	Yes
Live image view	Yes
Show image during scanning	Yes
Auto focusing in live view mode	Yes
Manual focusing in live view mode	Yes
Navigation on the preview image	Yes
Selectable focus frequency	Yes
Adjustable image quality	Yes
Multiple image encoding	Yes
Multilayer Scan (Z-stack) (optional)	Yes
Number of layers	1-30
Adjustable layer distance	0.2 μ m - 2 μ m
Multilayer (Z-stack) per FL channel	Yes
Extended Focus (sharpest image for each FOV) (optional)	Yes
Multiple Scanning profiles	Yes
Multiple Color Profiles & Color Schemes	Yes: 1 to 5 + Custom
Image compensation	Yes, multiple
Barcode parsing	Yes
- Digital slide name - Output folder name - Scan profile auto selection	
Scan Quality Control	Yes
Preview types	Brightfield, Fluorescent Prescan,
Event Call Handling	
External Application Call	Yes
- Slide scan finished - Scan error occurred	
Message Call	Yes
- Slide scan finished - Slide scan stopped - Scan error occurred - Scanning warning	