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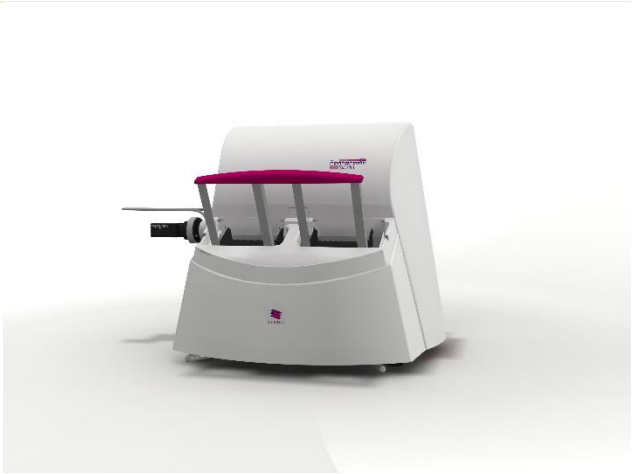
THE DIGITAL PATHOLOGY COMPANY

Pannoramic digital slide scanners
Product Specification Sheet

Pannoramic SCAN II 150-slide digital slide scanner World class brightfield and fluorescent whole slide scanning Compact fluorescent scanning Small footprint and dimensions Low maintenance Robust middle size system for diagnostic purposies Couninous loading. Simple and easy use	

Common characteristics:

- Wideband Multichannel RGB LED light source **for brightfield operation**
- **High-end fluorescent (FL)** illumination engine
- **Multiband FL filter** support
- **9 filter tubes with 45-channels FL scanning**, software-controlled FL filter positions
- **Multiband FL filter** support
- High-resolution scanner **imaging optics**
- **150 slides** fully automatic loading and scanning
- Automated **tissue detection** and automated **coverslip detection**
- Outstanding 0.09 µm/pixel resolution is achieved with the 40×/0.95 NA (equivalent to 110× magnification) objective
- **Multilayer** (Z-stack) scanning (optional)
- **Extended Focus** scanning (optional)
- 1D and 2D **barcode reading**
- **Scan method**: area scanning with autofocus.
- Multiserver handling
- Fully automated scanning operation through server-side barcode reading
- Compatible with the new DX solution
- Automated system recovery
- Scanning history for creating daly, weekly, monthly reports

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Acceptable **slide format** (Pannoramic SCAN 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 SCAN II

Dimensions (width x depth x height)	
Pannoramic SCAN II Base Unit	approx. 740 mm x 530 mm x 450 mm
Pannoramic SCAN 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 SCAN II Base Unit	approx. 26 kg
Pannoramic SCAN II Base Unit with fluorescent option	approx. 29 kg
Pannoramic SCAN 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)	max. 75 % at 35 °C
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	500 hPa to 1060 hPa
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 6101-1:2010, IEC 61010-2-081:2015, IEC 61010-2-101:2015
Electromagnetic compatibility	IEC 61326-2-6:2012
Over-voltage category	II
Radio interference suppression	under EN 55011 class B
Noise immunity	under DIN EN 61326
Base unit input voltage	24 V DC ±1 V
Power consumption (SCAN II Base Unit)	75 VA
Power Supply Unit (24 V)	

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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. 3 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
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
High-end fluorescent light source **(optional)**	Lumencor SPECTRA 6 solid state light engine
Channel switching speed.	~ 10 µs
Spectral bands	6 special wavelengths 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 Scanner Sofwtare	included by the Pannoramic SCAN II System
Slide Viewer – Digital Microscopy Software Application for research porpuses	included by the Pannoramic SCAN II System
ClinicalViewer for diagnostic porpuses	included by the Pannoramic SCAN II System
Slide capacity & loading	
Slide capacity	150 (6 magazines / 25 slides per magazine) or continuous loading
Slide loading	Automatic
Magazine loading	**Countinous**
Available objectives	
20x/0.8 NA	(1st objective, default)
40x/0.95 NA	(2nd 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	

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- 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, IS08 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

Tissue detection	Automatic
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. Yes
Multiple tissue areas selectable / recognized automated Separate scanning	Each blob will be scanned as separated digital slide.
Pre-scan function	For fluorescence sample detection

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
Pixel resolution with 20x objective and C-mount adapter 1x	0.17 µm / 60x
Pixel resolution with 40x objective and C-mount adapter 0.63x	0.14 µm / 75x
Pixel resolution with 40x objective and C-mount adapter 1x	0.09 µm / 110x
Connection type	USB 3.0

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4.2 MP Scientific CMOS back illuminated digital imaging camera (for brightfield and fluorescence) **(optional)**	13.3 x 13.3/18.8 mm monochrome sCMOS (CIS2020) sensor
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	USB 3.1
Scanning speed (brightfield, 20x objective, 15 mm x 15 mm)	
0.27 µm / pixel (0.63x camera adapter, 5MP high perf. CMOS)	1 min 30 sec
0.17 µm / pixel (1.0x camera adapter, 5MP high perf. CMOS)	2 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-aimed 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-2133 CPU@3.60GHz 3.60 GHz or similar
RAM	Min 64 GB
Hard Disk (HDD) for OS	500 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 USB3
Input units	keyboard, mouse

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Operating System	Windows 10 Pro (64)
Zero Noise function	Intel® vPro™ technology, DeskView manageability suite
System management	
Green technology	
Digital Slide Storage	
Scan to local network (Slide Server not included)	Yes
Scan to cloud infrastructure (Slide Server not included)	
Scan to local Hard Drive	Yes
	Yes
Scanner features	
Scanning with selectable magnification	
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
	Yes
Adjustable image quality	
Multiple image encoding	Yes
	Yes
Multilayer Scan (Z-stack) (optional)	
Number of layers	**Yes**
Adjustable layer distance	1-30
Multilayer (Z-stack) per FL channel	0.2 µm - 2 µm
Extended Focus (sharpest image for each FOV) (optional)	Yes **Yes**
Multiple Scanning profiles	**Yes**
Multiple Color Profiles & Color Schemes	**Yes: 1 to 5 + Custom** Yes, multiple.
Image compensation	Yes
Barcode parsing - Digital slide name - Output folder name - Scan profile auto selection	
Scan Quality Control	
Preview types	Yes Brightfield, Fluorescent Prescan,
Event Call Handling	
External Application Call - Slide scan finished - Scan error occurred	Yes
Message Call - Slide scan finished - Slide scan stopped	Yes

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- Scan error occurred
- Scanning warning

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