

# Pannoramic digital slide scanners

## Product specification sheet

### PANNORAMIC 1000 DX Digital Scanner

Ultra high throughput volume scanner  
 World class brightfield whole slide scanning  
 up-to 1200-slide capacity robotized loader  
 Ultra high-speed scanning  
 Scanning in arbitrary rack order



#### Common characteristics:

- High-resolution scanner **imaging optics**
- **up to 1200 slides** full automatic loading and scanning
- Automated **tissue detection** and automated **coverslip detection**
- 1D and 2D **barcode reading**
- Automated slide loading for single and double (optional) width slides
- **Scan method:** area scanning with autofocus
- Supports **single** and **macro slides** parallel
- New Server based (CaseManager) scanning mode CaseManager defines the scanning parameters)
- **DICOM file format support**

#### Acceptable **slide format** (Pannoramic 1000 DX):

Slide	Cover slip
<b>Length:</b> 75.0 to 76.0 mm <b>Width:</b> 25.0 to 26.0 mm / 50.0 to 51.0 mm <b>Thickness:</b> 0.9 to 1.2 mm  – 45° beveled or 90° corners – Grounded or cut edges – Recommended: Colored area for placement of barcode stickers	<b>Length:</b> max. 50 mm <b>Width:</b> max. 48 mm (recommended: 44 mm) <b>Thickness:</b> No. 1 and 1.5 (0.13 to 0.16 mm and 0.16 to 0.19 mm, respectively)

## Detailed technical specification

### Pannoramic 1000 DX

<b>Dimensions (width x depth x height)</b>	
Pannoramic 1000 DX Base Unit	approx. 1540 mm x 902 mm x 1004 mm
Pannoramic 1000 DX Control Unit	approx. 190 mm x 620 mm x 430 mm
1920x1200 Display (24") (not included)	approx. 559 mm x 204 mm x 384 mm
<b>Weight</b>	
Pannoramic 1000 DX Base Unit	approx. 270 kg
Pannoramic 1000 DX Control Unit	approx. 20 kg
Display (24") (not included)	approx. 7,1 kg
<b>Ambient conditions</b>	
<b>Transportation / Shipment (packed)</b>	
Permissible ambient temperature	-20 °C to +70 °C
<b>Storage</b>	
Permissible ambient temperature	+0 °C to +60 °C
Permissible relative air humidity (non-condensing)	max. 75 % at 35 °C
<b>Operation</b>	
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
<b>Operating Data</b>	
Category of operating environment	closed room facilities
Protection class	I
Degree of protection	IP 20
Electrical safety	in compliance with EN 61010-1:2010, EN61010-2-081:2015, EN 61010-2-101:2017
Over-voltage category	II
Electromagnetic compatibility	in compliance with EN31326-2-6:2013
Radio interference suppression	in accordance with EN 55011 class B
Noise immunity	in accordance with EN 61326-2-6:2005
Base unit input voltage	100-240V AC
Power consumption (Base Unit)	Max 200W
Fusing	2 x T 7A, 250V
<b>Light sources</b>	
Transmitted light operation	Precision-Aligned Pulsed Xenon Light Source
Average service life of light source	1 x 10 <sup>9</sup> flashes
<b>Software</b>	
Pannoramic 1000 DX Control Software, PANNORAMIC Diagnostic Scanner Software	included by the Pannoramic 1000 DX System
Case Viewer – Digital Microscopy Software Application	included by the Pannoramic 1000 DX System
Converter – Digital Slide Converter Application	included by the Pannoramic 1000 DX System
<b>Slide capacity &amp; loading</b>	
Slide capacity	up to 1200, depends on configuration
Default configuration	840 (40 slide racks: standard (20 slide /each), 8 racks: for double width slides (5 slides/each)
Slide loading	Automatic

Supported rack type	3DH, Sakura 4768, Leica 14051252473
<b>Available objectives</b>	
20x/0.8 NA	(1 <sup>st</sup> objective, default)
40x/0.95 NA	(2 <sup>nd</sup> objective, default)
Carl Zeiss C-Apochromat 40xw/1.2 NA	(3 <sup>rd</sup> objective, <b>optional, requires immersion system</b> )
Number of supported objectives	3
Motorized objective changer	Yes, for 3 objectives
<b>Identification of slides / Barcode reading</b>	
Slides are identified by a 12megapixel preview camera. Label area is saved as image and barcode is interpreted as a character string, with capability for interpretation of the following types of 1D and 2D s:	
<b>1D barcodes:</b>	
<ul style="list-style-type: none"> <li>• Code39 (ASCII encoding)</li> <li>• Code128 (UCC/EAN128) (ASCII encoding)</li> <li>• Code 16K</li> <li>• Interleaved 2 of 5</li> <li>• Standard 2 of 5</li> <li>• IATA 2 of 5</li> <li>• Matrix 2 of 5</li> <li>• Telepen</li> <li>• Code93 (ASCII encoding)</li> <li>• Code 11</li> <li>• MSI</li> <li>• Codabar</li> <li>• Patch Code</li> <li>• Pharmacode</li> <li>• EAN-13 (Numeric encoding)</li> <li>• EAN-8 (Numeric encoding)</li> <li>• UPC-A (Numeric encoding)</li> <li>• UPC-E</li> </ul>	
<b>2D barcodes:</b>	
<ul style="list-style-type: none"> <li>• Aztec</li> <li>• Data Matrix (Numeric encoding, Alpha encoding, AlphaNumericPunc encoding, AlphaNumeric encoding, ASCII encoding, IS08 encoding)</li> <li>• Micro QR</li> <li>• Maxicode (Encoding mode 2, 3, 4, 5, 6)</li> <li>• MicroPDF417 (Standard encoding type)</li> <li>• PDF417 (Standard encoding type)</li> <li>• QR (QR code Model 1, 2 encoding)</li> </ul>	
<b>Image digitization</b>	
<b>12 MP high performance CMOS digital imaging camera</b>	
Pixel size	5.5 µm x 5.5 µm
Camera resolution	4096 (H) × 3072 (W) pixel
Bit depths	8 bit
Pixel resolution with 20x objective and C-mount adapter	0.24 µm / 41x
1.6x	0.12 µm / 82x
Pixel resolution with 40x objective and C-mount adapter	1.6x
Connection type	CoaXPress – 4 lanes

<b>25 MP high performance CMOS digital imaging camera for brightfield scan mode</b>	
Pixel size	Global Shutter CMOS 2.5 µm x 2.5 µm
Camera resolution	5120 x 5120 pixel
<b>Digital slide image resolution:</b>	
Pixel resolution with 20x objective and C-mount adapter 1.0x	0.24 µm / 40x
Pixel resolution with 40x objective and C-mount adapter 1.0x	0.12 µm / 80x
Connection type	CoaXPress – 4 lanes
<b>Scanning speed (brightfield, 20x objective, 15 mm x 15 mm)</b>	
0.24 µm / pixel (1.6x camera adapter, 12 MP high perf. CMOS)	up to 80-100 slides / hour (depending on sample)
<b>Features of the Diagnostic Scanner Software (DX)</b>	
<b>Digital slide properties</b>	
Digital slide format	MRXS
Image type	.JPG,
Slide file format	DICOM, MRXS,
Scanning mode	Brightfield only
Integrated Scanning system to Diagnostic product package	
<b>Recognition of tissue area</b>	
AI-based (Artificial Intelligence) fully automated tissue detection YES	
Via the USB preview camera (VRmC-8+ Pro) with automatic threshold	
Exclusion of cover glass	Automatic
Remove of specks from digitization	Automatic
Scan inside marker (selectable)	Only areas encircled by marker pen will be scanned
Multiple tissue areas selectable / recognized automated	Yes
<b>Control Unit and minimum system requirements</b>	
CPU	Intel® Xeon® Gold 6240 Processor 49,5 MB L3 cache Sockets:2, 36 Cores / 28 Thread (Base 2,3 GHz, Max Turbo 3,37 GHz)
RAM	96 GB (12x8 GB DDR4-2666 rg ECC)
Hard Disk (SSD) OS	256 GB SSD
Hard Disk	1+2 TB SATA III / 2x1 TB SSD
Graphics Output	4x MiniDisplayPort (max resolution 5120x2880 px)
Ports	Front 2x USB 3.0, 2x USB 2.0 Rear 6x USB 3.0 2 x Ethernet (RJ-45) 10/100/1,000 MBit/s 1x Double CameraLink 1x CoaXPress Quad 1x FireWire (1394 A)
Input units	keyboard, mouse
Operating System	Windows 10 Pro (64) Windows 11 (64)
Zero Noise function	Intel® vPro™ technology,
System management	DeskView manageability suite
Green technology	
<b>Digital Slide Storage</b>	

Scan to local network (Slide Server not included)	Yes
Scan to SlideCenter server	Yes
Scan to PANNORAMIC Information System's server (Slide Server not included)	Yes
Scan to local Hard Drive	Yes
<b>Scanner features</b>	
<b>Fully automated scanning process</b>	Yes
<b>CaseManager Server based scanning mode</b>	Yes
Secured access to the DX scanner software	Yes
Multiple user levels	Yes
Easy to use scanning operation	Yes
Automated sample detection	Yes
Automated image quality check	Yes
Automated rescanning process in the case of poor image quality	Yes
Priority scan	<b>Yes</b>
Multiple server handling during scanning operation	<b>Yes</b>
Automated image quality check	Yes
Event History export to csv	
Central Log Service server client connection. External control of the set of the scanning process.	<b>Yes</b>
<b>Multilayer Scan (Z-stack) (optional)</b>	1-30
Number of layers	0.2 $\mu\text{m}$ - 2 $\mu\text{m}$
Adjustable layer distance	<b>Yes</b>
<b>Flash Z stack scanning mode</b>	<b>Yes</b>
<b>Extended focus scanning mode</b>	<b>Yes</b>
<b>Multiple Scanning mode</b>	<b>Yes</b>
<b>Multiple Color Profiles &amp; Color Schemes</b>	<b>Yes: 1 to 10</b>
<b>Image compensation</b>	<b>Yes</b>
<b>Barcode parsing</b>	
- Digital slide name	Yes
- Patient identification	Yes
- Scanning mode auto selection through LIS/PIS	Yes
<b>Preview types</b>	Brightfield