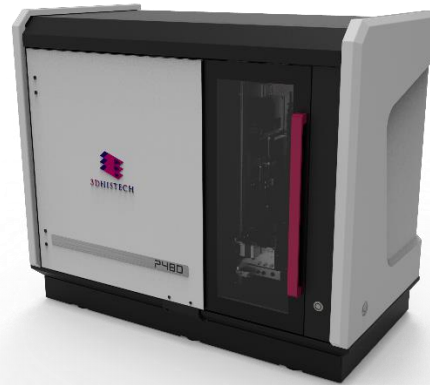


Pannoramic digital scanners

Product specification sheet

PANNORAMIC 480 DX Digital Scanner

Ultra high throughput volume scanner
World class brightfield whole slide scanning
up-to 480-slide capacity robotized loader
Ultra high-speed scanning
Scanning in arbitrary rack order



Common characteristics:

- High-resolution scanner **imaging optics**
- **up to 480 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 480 DX Digital Scanner):

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

Detailed technical specification

Pannoramic 480 DX Digital Scanner

Dimensions (width x depth x height)	
Pannoramic 480 DX Digital Scanner Base Unit	approx. 1195 mm x 902 mm x 1004 mm
Pannoramic 480 DX Digital Scanner 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
Weight	
Pannoramic 480 DX Digital Scanner Base Unit	approx. 240 kg
Pannoramic 480 DX Digital Scanner Control Unit	approx. 20 kg
Display (24") (not included)	approx. 7,1 kg
Ambient conditions	
Transportation / Shipment (packed)	
Permissible ambient temperature	-20 °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	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
Light sources	
Transmitted light operation	Precision-Aligned Pulsed Xenon Light Source
Average service life of light source	1 x 10 ⁹ flashes
Software	
Pannoramic 480 DX Digital Scanner Control Software, PANNORAMIC Diagnostic Scanner Software	included by the Pannoramic 480 DX System
Case Viewer – Digital Microscopy Software Application	included by the Pannoramic 480 DX System
Converter – Digital Slide Converter Application	included by the Pannoramic 480 DX System
Slide capacity & loading	
Slide capacity	up to 480, depends on configuration
Default configuration	20 slide racks: standard (20 slides/each), or 16 slide racks: standard (30 slides/each), 8 racks: for double width slides (5 slides/each)

Slide loading	Automatic
Supported rack type	3DH, Sakura 4768, Leica 14051252473
Available objectives	
20x/0.8 NA	(1 st objective, default)
40x/0.95 NA	(2 nd objective, default)
Carl Zeiss C-Apochromat 40xw/1.2 NA	(3 rd objective, optional, requires immersion system)
Number of supported objectives	3
Motorized objective changer	Yes, for 3 objectives
Identification of slides / Barcode reading	
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:	
1D barcodes:	
<ul style="list-style-type: none"> • 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:	
<ul style="list-style-type: none"> • 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) 	
Image digitization	
12 MP high performance CMOS digital imaging camera	
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

25 MP high performance CMOS digital imaging camera for brightfield scan mode	
Pixel size	Global Shutter CMOS 2.5 µm x 2.5 µm
Camera resolution	5120 x 5120 pixel
Digital slide image resolution:	
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 or Rapixo 4 lanes
Scanning speed (brightfield, 20x objective, 15 mm x 15 mm)	
0.24 µm / pixel (1.6x camera adapter, 12 MP high perf. CMOS or 1x adapter, 25MP high perform. CMOS)	up to 80-100 slides / hour (depending on sample)
Features of the Diagnostic Scanner Software (DX)	
Digital slide properties	
Digital slide format	MRXS
Image type	.JPG,
Slide file format	DICOM, MRXS,
Scanning mode	Brightfield only
Integrated Scanning system to Diagnostic product package	
Recognition of tissue area	
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
Control Unit and minimum system requirements	
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	

Digital Slide Storage	
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
Scanner features	
Fully automated scanning process	Yes
CaseManager Server based scanning mode	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	
Automated rescanning process in the case of poor image quality	Yes
Priority scan	Yes
Multiple server handling during scanning operation	Yes
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.	Yes
Multilayer Scan (Z-stack) (optional)	1-30
Number of layers	0.2 µm - 2 µm
Adjustable layer distance	Yes
Flash Z stack scanning mode	Yes
Extended focus scanning mode	Yes
Multiple Scanning mode	Yes
Multiple Color Profiles & Color Schemes	Yes: 1 to 10
Image compensation	Yes
Barcode parsing	
- Digital slide name	Yes
- Patient identification	Yes
- Scanning mode auto selection through LIS/PIS	Yes
Preview types	Brightfield