Focus on your working style.

ZEISS ZEN core

Your Microscope Software for User-specific Repetitive Workflows in Biomedical Labs

zeiss.com/zen-core

Seeing beyond

Your Microscope Software for User-specific Repetitive Workflows in Biomedical Labs

You decide what your microscope software looks like.
With ZEN core you can adapt the user interface exactly to your application.

- Configure your ZEN core only with necessary functions.
- Define and combine workbenches easily to create workflows, so called jobs.
- Jobs guide your operators through a defined flow of consecutive tasks ensuring data repeatability and ease of use.
- Combine Job Mode with user management functions to assign specific imaging tasks to certain users and user groups.
- Opt for the GxP or Multi Channel toolkit, when traceability or fluorescence imaging of biological samples is important to you.
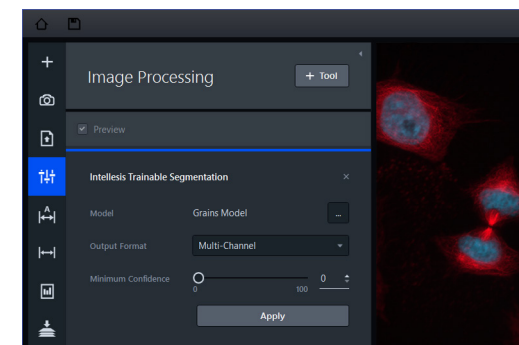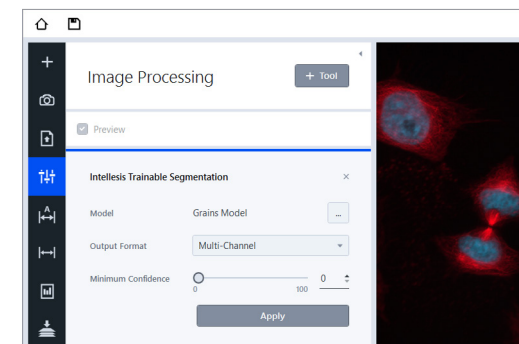
The ZEN core user interface provides both a bright and a dark mode to meet the needs of different users and their preferred working environment.

Simpler. More Intelligent. More Integrated.

**Easy to Configure. Easy to Use.**

ZEN core gives you the benefit of an adaptive user interface tailored to your needs of a biomedical lab. The easy-to-follow GUI configuration accommodates tasks of all kinds and any complexity. Define visible functions as well as dedicated working procedures. ZEN core also offers you configurable user management, so you can specify users and user roles. Whatever their level of experience, operators will learn the software quickly.

Define workflows. No workarounds.

With ZEN core you can set up individual workflows – from image acquisition, processing, analysis to final reports. Use the built-in automated image acquisition routines, such as HDR or Best Image to benefit from the consistency of a repeatable workflow. With application-specific modules you enhance your microscope to get typical workflows of your biomedical lab simply done.

You need GxP compliance? Go for it.

Are you working in pharmaceutical or medicine production or in another regulated environment? Do you require FDA 21 CFR Part 11 conformity? Then, count on full traceability along your microscopy workflow with the GxP-toolkit. It provides save and conform means for reliable quality results.
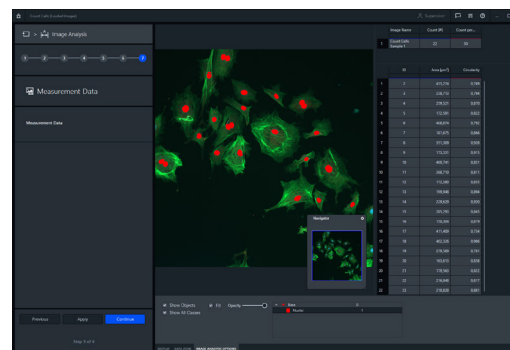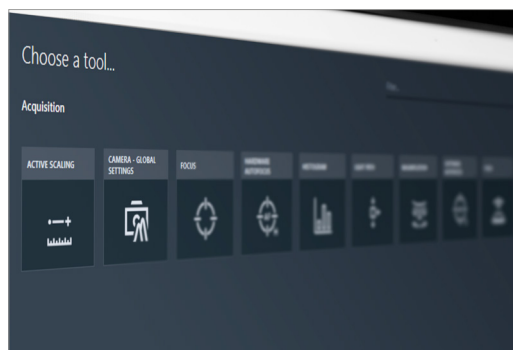
Expand Your Possibilities

User Management Designed to Assure Data Repeatability and Integrity

Supervisor
Experienced User

Operator
Routine User

Administrator
Lab Manager

Job Mode

Create & manage job templates	→	Run job templates

Browse job results	←	Report job results

Free Mode

Perform free examinations

Maintenance Mode

Manage user accounts

Maintain settings and calibration

Manage data
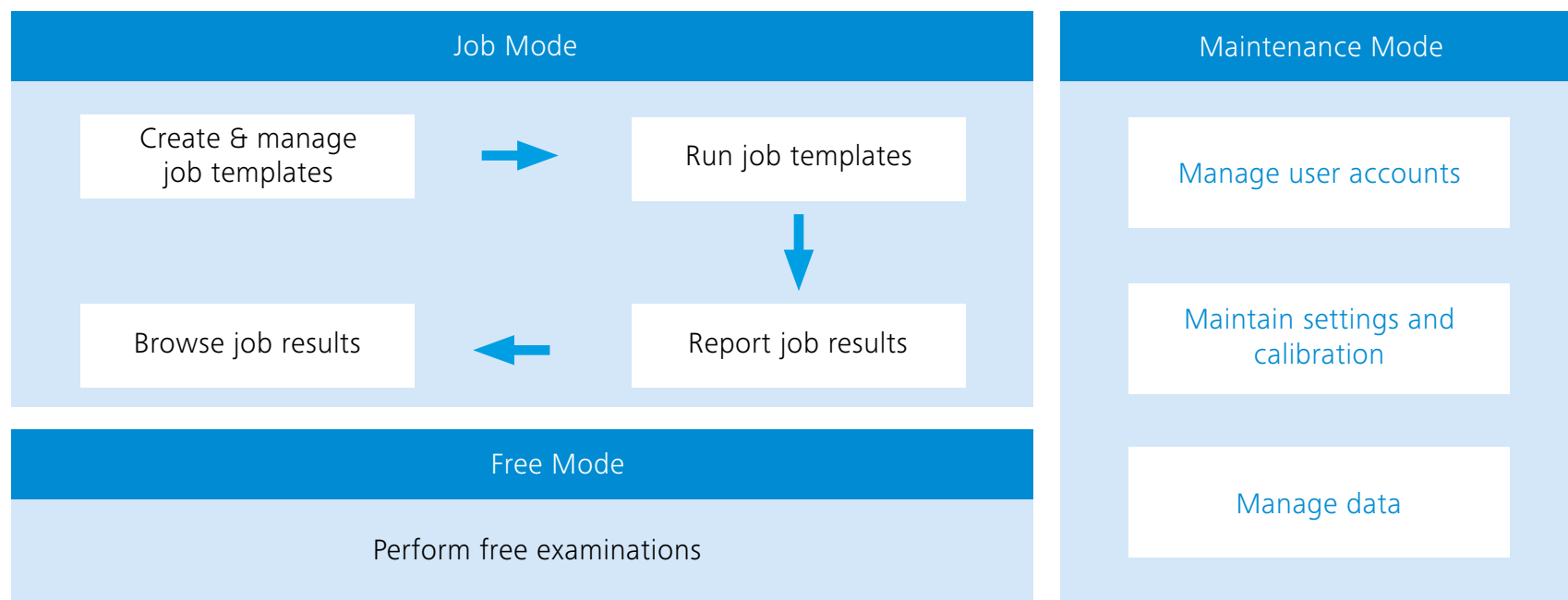
Sample configuration of different user roles

Expand Your Possibilities

Keep doing your workflows

Don't be afraid of repetetive tasks. Define a Job and setup your imaging workflow. Define, lock, or hide microscope parameters according to your needs. Only the weekend can stop your operators to happily get reproducible results. Day after day.

Workflow Example

Step 1	Step 2	Step 3	Step 4	Step 5
User form to enter sample information, project name or user data	Image acquisition combined with Tiles or EDF	Interactive or automatic measurements	Automated reporting	Automated archiving of relevant data
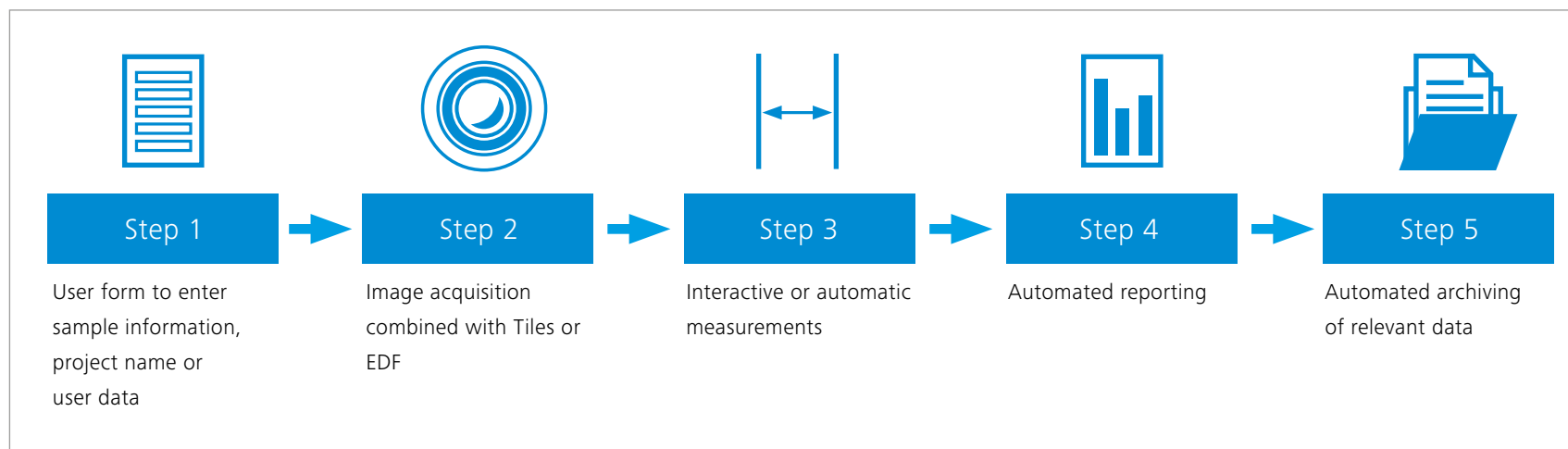
Your Simple and Affordable ZEN Packages for Laboratory Routine

Instruments	Manual Light Microscope	Motorized Light Microscope	SEM/FIB-SEM
Base Software	ZEN starter	ZEN core	
Acquisition Packages	Base	Motorized	Smart Acquisition
Toolkit Packages	2D Toolkit	3D Toolkit	Vision4D Toolkit *
	Connect Toolkit	AI Toolkit	GxP Toolkit
System / Driver / Special	Coded Mic	Linkam	

* Sold as a stand-alone software

6

ZEISS ZEN core at Work

GxP Toolkit

The GxP toolkit meets the requirements of regulated industries, such as pharmaceutical companies that often require FDA 21 CFR Part 11 compliance. It allows you to trace complete workflows through seamlessly integrated microscopy hardware and software. No matter if you need to characterize the particle size of powders, starch, or other substances, if you check for the presence of contaminants, or if you monitor the microbial load of a production facility (gram staining), with ZEN core, every workflow can be made GxP compliant.

Audit Trail of all user activities

The GxP toolkit helps you to:

- Guarantee reproducible results and secured processes to prevent regulatory consequences
- Automatically document your microscopy examinations to make your audit safe
- Provide backup / disaster recovery functionality, and archive / database capability

Use a variety of tools and functionalities in combination with the required qualification and validation activities to maintain GxP compliance for your images, tables, and reports:
- User management
- Traceable audit trail
- Release procedure of workflows
- Electronic signatures, incl. countersign functionality
- Checksum protection of process-critical data

User Management

FDA 21 CFR Part 11 compliant

Audit Trail

ZEN core GxP Module

Workflow Management

Electronic Signature

Disaster Recovery

ZEISS ZEN core at Work

ZEN Data Storage and Data Explorer

Do you acquire many microscope images or data? Do you need to collaborate or consult with internal or external partners? Remember how long it took, when you have searched for a certain data set that was generated 2 years ago? ZEN Data Storage with Data Explorer is your solution for smart storage and data access. You create a central image and data repository that is accessible from anywhere and anytime.

Work efficiently and modern while you:

- Use an intelligent, central data management solution
- Effortlessly share images, data, reports and workflows
- Access data with any mobile device or PC, even on the other end of the globe
- Easily browse, view and annotate images
- Use role based permissions when working with partners
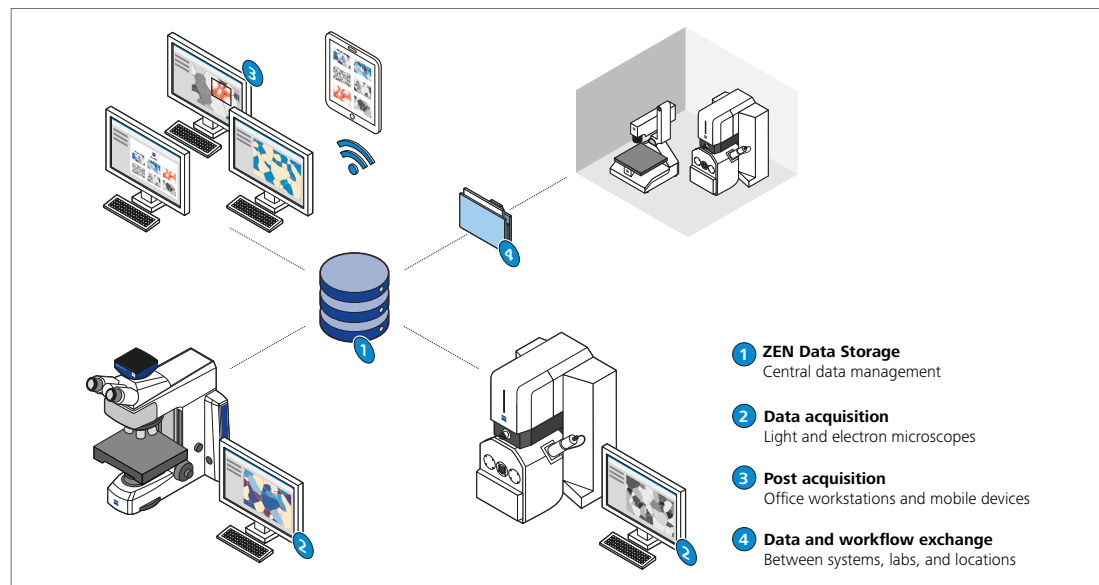
1 **ZEN Data Storage**
Central data management

2 **Data acquisition**
Light and electron microscopes

3 **Post acquisition**
Office workstations and mobile devices

4 **Data and workflow exchange**
Between systems, labs, and locations

ZEISS ZEN core at Work

ZEN Multi Channel Acquisition*

Fluorescence microscopy is a standard technique in biomedical disciplines and helps understanding structure and dynamics within cells, tissue, and other biological samples. Being able to automatically acquire and overlay fluorescence signals in individual channels is key for optimal visualization and data analysis. Prominent examples for fluorescence imaging include the characterization of the spatial distribution of proteins, structural changes, cell-cell interactions, and colocalization experiments.

ZEN Multi Channel Acquisition allows for:

- Easy & intuitive definition of your experiment using Smart Setup
- The combination of fluorescence and transmitted light channels
- Channel specific camera and light source settings

ZEN Multi Channel Acquisition can also be combined with the GxP toolkit if you work in regulated environments or need to ensure data authenticity. In Job mode, complete workflows including image acquisition, analysis, and reports can be realized.

* Part of Base Acquisition Toolkit
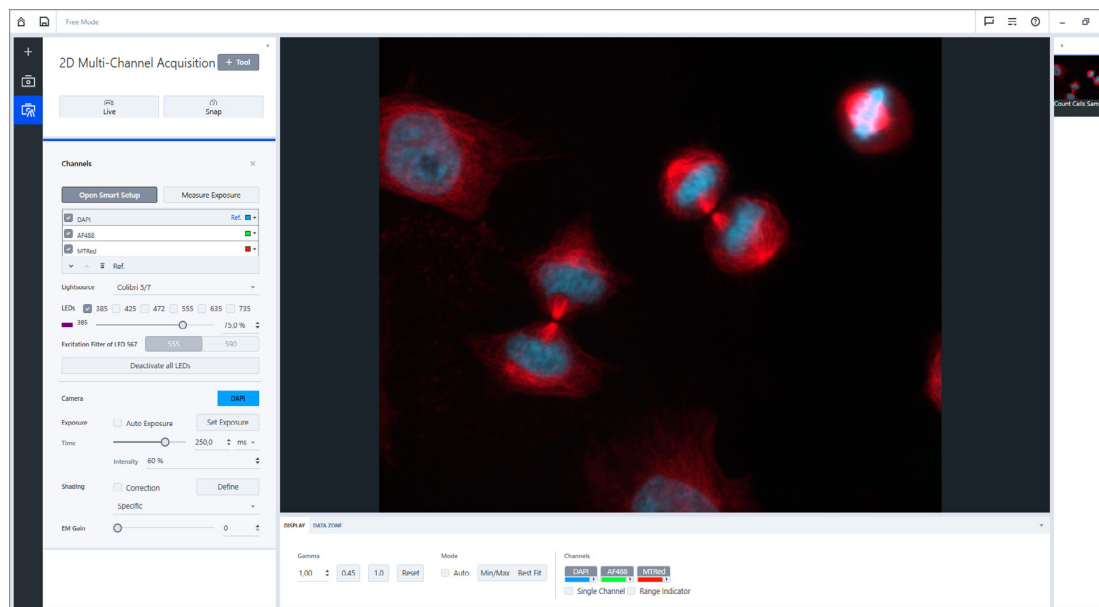
2D Multi-Channel Acquisition workbench allows to acquire images with multiple (fluorescent) channels in one go with automated switching of illumination and camera mode settings per channel.
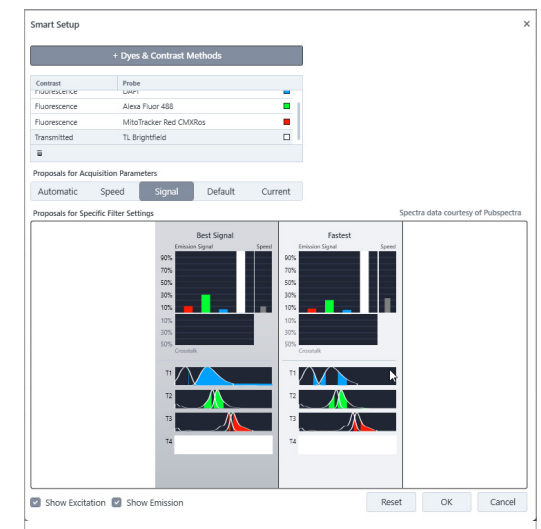
Smart Setup allows to easily define the channels of the acquisition.

Your Flexible Choice of Components

General Base Functionality

General Functions	ZEN starter	ZEN core	Description
General Workbenches	●	●	General image acquisition and image analysis functionality via workbenches
Job Mode		●	Configurable mode to guide operators through a pre-defined workflow
Basic Measurement	●	●	Basic functions for interactive measurement
Measurement	●	●	Extended functionality of interactive measurement
Online Measurement		●	Measurement of areas and non-area values in the live image
Topo View		●	3D visualization of topography images and hightmap representation
Reporting	●	●	Creation of reports containing detailed information
Report Template Creator (MS Word® Add-In)	●	●	Software to create report templates using MS Word®
ZEN Connect Entry	●	●	Interactive acquisition and contextual display of images in single- and multi-instrument workflows
CAD Import		●	Import CAD data to create overlay images
ZEN Data Storage Client	●	●	Seamlessly connect to ZEN Data Storage Server for central storage of documents and templates

LM-specific	ZEN starter	ZEN core	Description
Microscope Control		●	Control of light microscopes and devices via software
Camera Control	●	●	Control of cameras from software
Panorama	●	●	Manual acquisition of high resolution images; automated acquisition and stitching functionality on coded and non-coded stages
Manual Extended Focus	●	●	Manually acquire multiple images at different focus positions and combine them to an image with a greater depth of field

EM-specific	ZEN starter	ZEN core	Description
Microscope Control		●	Control of scanning electron microscopes and devices via software

● included   ○ optional

Your Flexible Choice of Components

Acquisition Toolkits		ZEN starter	ZEN core	Description
Base Acquisition	Multichannel Acquisition Time Series	○	○	■ Enable routine applications: ■ Simultaneous acquisition of multiple (fluorescence) channels ■ Acquisition of images at defined intervals
Motorized Acquisition	Motorized Extended Focus Autofocus Tiles & Positions		○	Enable motorized applications on your microscope: ■ Automatically acquire multiple images at different focus positions and combine them to create an image with a greater depth of field ■ Determine the focus position of your sample ■ Record exact and high-resolved images of large samples by automatically scanning pre-defined areas
Smart Acquistion	Guided Acquisition		○	Automatically identify interesting positions in overview images and create detail scans of respective positions
Linkam	Linkam (Hardware Control)		○	Interface to control Linkam heating and cooling stages
Coded Microscope	Coded microscope	○		Read out of coded microscope components

Toolkit		ZEN starter	ZEN core	Description
GxP	GxP		○	Ensure traceability and accountability of workflows (precondition for 21 CFR Part 11 compliance)
2D Toolkit	Image Analysis Advanced Processing		○	Toolkit for 2D image analysis by creation of automatic measurement programs. Advanced processing functions included
3D Toolkit	3Dxl Advanced Processing		○	Visualization of 3D data in ZEN core
AI Toolkit	ZEN Intellesis Segmentation ZEN Intellesis Object Classification ZEN Intellesis AI denoising		○	Complete package for AI application including integrated training interfaces: ■ Automated image segmentation based on machine learning algorithms ■ Automated object classification of segmented and analyzed images based on machine learning algorithms ■ AI-based denoising of images using noise-2-void algorithms
Connect Toolkit	ZEN Connect ZEN Connect 2D Add-on ZEN Connect 3D Add-on Third-party Import		○	Complete Connect package to extend the ZEN Connect functionality. Includes L-marker calibration for correlative LM to EM workflows and functionality for 3D data. Import 3rd-party microscopy images and metadata into ZEN core using Bio-Formats included.

● included   ○ optional

Your Flexible Choice of Components

System Requirements

Minimum System Requirements

Processor	Intel® CPU with 6 cores, 3.3 GHz clock frequency, e.g. Intel® Core® i5-10600 CPU
Memory	16 GB RAM
Graphics adapter	Support for resolutions of at least 1920 × 1200 pixels, 32 Bit true color, DirectX® 12.0 (or higher), e.g. integrated Intel® UHD Graphics 630 or dedicated graphic card NVIDIA Quadro P1000 4GB
Hard drive	1× 512 GB SSD NVMe and 1× 8 TB HDD SATA 6Gb/s
USB interface	2× USB 2.0 and 2× USB 3.0
Monitor	24" TFT display, vertical resolution 1200 pixels at least
Operating system	Microsoft® Windows® 10 ×64 Professional or Enterprise, no special customer adapted versions.

Recommended System Requirements

Processor	Intel® Xeon® CPU with 4 cores, 3.8 GHz clock frequency, e.g. Intel® Xeon® Gold 5222
Memory	64 GB RAM
Graphics adapter	Support for resolutions of 3840 × 2160 pixels ("4K"), 32 Bit true color, DirectX® 12.0 (or higher), OpenGL® 4.5 (or higher), e.g. dedicated graphics card NVIDIA Quadro RTX4000 8 GB.
Hard drive	1× 512 GB SSD NVMe and 2× 6 TB HDD SATA 6Gb/s (configured as 6 TB RAID 1)
USB interface	4× USB 2.0 and 2× USB 3.0
PCIe interface	2 available PCI Express x8 Gen2 slots for camera interface cards
Monitor	27" TFT display, vertical resolution 1440 pixels at least
Operating system	Microsoft® Windows® 10 ×64 Professional or Enterprise, no special customer adapted versions.

ZEISS Service – Your Partner at All Times

Your microscope system from ZEISS is one of your most important tools. For over 170 years, the ZEISS brand and our experience have stood for reliable equipment with a long life in the field of microscopy. You can count on superior service and support - before and after installation. Our skilled ZEISS service team makes sure that your microscope is always ready for use.

Procurement

- Lab Planning & Construction Site Management
- Site Inspection & Environmental Analysis
- GMP-Qualification IQ/OQ
- Installation & Handover
- IT Integration Support
- Startup Training

Operation

- Predictive Service Remote Monitoring
- Inspection & Preventive Maintenance
- Software Maintenance Agreements
- Operation & Application Training
- Expert Phone & Remote Support
- Protect Service Agreements
- Metrological Calibration
- Instrument Relocation
- Consumables
- Repairs

New Investment

- Decommissioning
- Trade In

Retrofit

- Customized Engineering
- Upgrades & Modernization
- Customized Workflows via APEER

Please note: Availability of services depends on product line and location

>> www.zeiss.com/microservice

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