ZEN Imaging Software

Faster. Easier to Use. More Universal.
The Software for All Systems.

ZEISS

ZEN Shortens the Path to Your Goal

ZEN – ZEISS Efficient Navigation – is the single user interface you will see on all imaging systems from ZEISS. ZEN software leads you simply and quickly to the result. At all times you see which options the system is making available to you and which step is appropriate to take next. ZEN makes it easy to operate every imaging system from ZEISS correctly and intuitively. As a result you save time, reduce training and support costs, and get faster answers to your questions.

▶ Click here to view this video
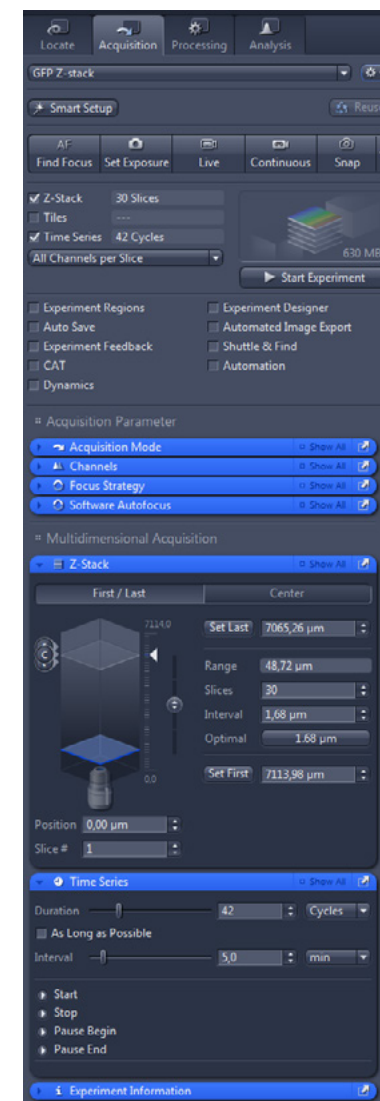
Simpler. More Intelligent. More Integrated.

**ZEN: The Essentials Count –
Focus on What You Need**

ZEN controls all imaging systems from ZEISS, letting you operate all of your devices with the same convenient interface. ZEN arranges operating elements in a way that follows your workflow. Functions you use only rarely are hidden away, out of sight – but always there with a single click.

**Smart Setup: Select Fluorophore.
Acquire. Done.**

Smart Setup is the core of ZEN – your intelligent control centre. Select the dye for your sample from the database with more than 500 dyes and ZEN automatically applies all necessary settings for your imaging system. The innovative "Motifs" feature helps you to further optimize your imaging with a single click.

A Secure Format for Important Data

The security of your data gets top priority as ZEN stores each of your experiments with all its metadata. Using the data format .czi from ZEISS you can even process the huge amount of data you acquire with our fast 3D imaging systems. Alternatively, store your images as OME-TIFF, the image format specification of the Open Microscopy Environment including metadata, to facilitate cross-plattform image data exchange.
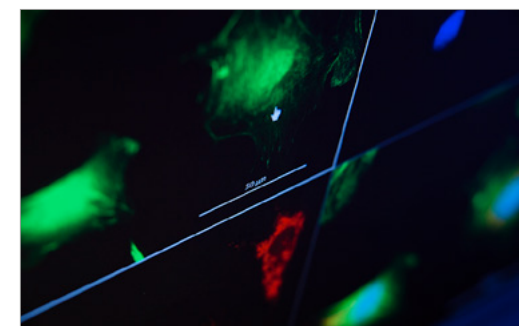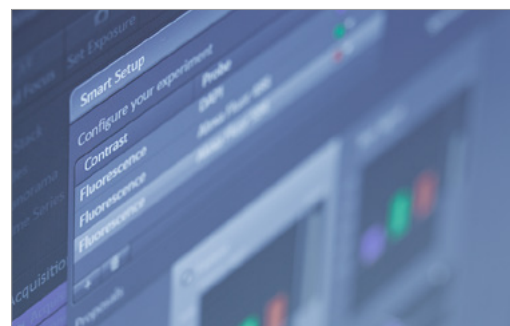
ZEN at Work

- Image subcellular trafficking in 3D over time with maximum acquisition speed
- Visualize cytoskeletal dynamics with highest sensitivity
- Carry out photobleaching experiments
- Perform functional imaging of cellular signal transduction with high temporal resolution
- Perform confocal live cell imaging with highest sensitivity

▶ Click here to view this video

Zebrafish blood

▶ Click here to view this video

Xenopus explant

▶ Click here to view this video

Drosophila embryo
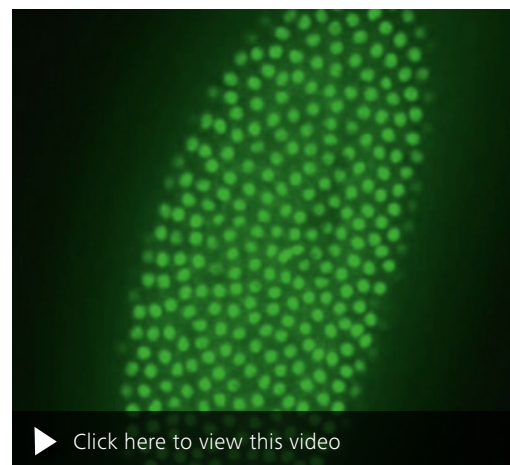
▶ Click here to view this video

Tobacco cells

Your Flexible Choice of Components

ZEN features the following module packages:

ZEN lite	Is the free basic version of the high-performance microscopy software ZEN. You do not need a license for ZEN lite, unless you want to extend this version with specific modules for your applications
ZEN desk	Supports you in your offline analyses. Extend this version with modules for image processing and analysis
ZEN pro	Controls all imaging systems except laser-based 3D systems
ZEN system	Is the software package for all imaging systems, including laser-based 3D imaging systems

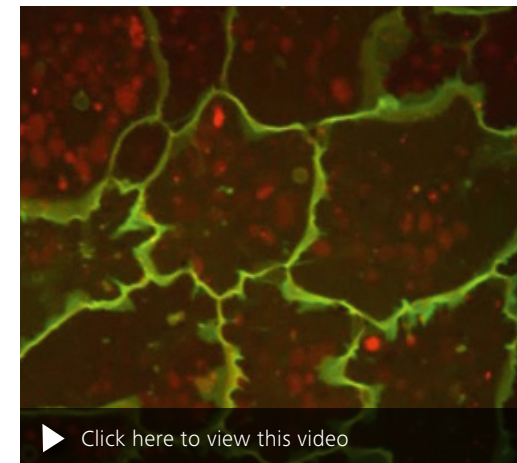| Basic functionality	ZEN desk	ZEN pro	ZEN system
User Interface and files	Graphical user interface, switchable light or dark design to adapt to ambient brightness*		
	User interface with stepless scaling and zooming		
	All functional elements can be displayed either in basic or advanced mode		
	Configuration options for the graphical user interface: menu bars* and customized buttons*, saving of workspace configurations, definition of properties of standard graphic elements and application of functions to TFT soft keys*		
	Image import (LSM, ZVI, BMP, TIF, JPG, GIF, PNG) and function to convert images (TIF, JPG, BMP) into CZI format		
	Export to OME-TIFF-image format specification of the Open Microscopy Environment, including metadata, to facilitate cross-platform image data exchange		
	Export into ZVI, BMP, GIF, JPG, PNG, TIFF, HDP image and AVI and WMF video formats		
	Batch Export of images and videos		
Hardware Control		Full integration of ZEISS microscopes, cameras and accessories	
		Interactive and automatic control of the motorized microscope components	
		Transfer of information from encoded components into the software	
		Reproducible acquisition with millisecond precision – Control of trigger board (analog/digital I/O card) for hardware control	

* ZEN (blue edition) only

Your Flexible Choice of Components

ZEN features the following module packages:

Basic functionality	ZEN desk	ZEN pro	ZEN system
Image Acquisition		Smart Setup function for fully automatic creation of experiments to acquire multichannel fluorescence and transmitted light images. "Motif" feature available to further optimize acquisition experiments for quality or speed	
		Acquisition experiments can be configured, saved and reloaded. Reuse function from images automatically restores acquisition parameters	
		Movie Recorder* enables fast and simple acquisition of movie clips through use of Start and Stop	
		Sequence of acquisition dimensions can be selected (depending on active dimensions)	
		Interactive graphical representation of the microscope light path	
		Fully automatic assignment of geometric scalings for image acquisition. Manually created scaling supported for even higher accuracy	
		Recording and saving of acquisition history* as metadata in CZI image format. This format has been developed to be as close as possible to the OME specification, Copyright OME (Open Microscopy Environment)	
		Automatic saving of acquired images in CZI (including metadata) to prevent image data loss	
Analysis, Processing and Views	Navigator window*		
	Interactive measurement, Scale Bars and Text Annotations		
	Management, visualization and printing of metadata and images		
	Post-Processing of images: standard operations for image optimization: contrast, brightness, gamma, colors, smoothing, sharpening, geometric corrections		
	Image file browser		
	Up to three independent image containers, image comparison view		
	Gallery view		
	View for histogram measurement		
	View for profile measurement		
	2.5D (pseudo-3D) view		
	Info view for metadata, partially editable		
	Functions for working with data tables: filtering and sorting of tables*		
	Diagram view to display data in the form of histograms, line plots, bar and pie charts* or x/y scatter plots		
	Image splitter function for synchronized comparison of up to 16 images		
	Project based management of images		
	Graphical view to display all images of a sample in their context		
	Easy to use 3D Deconvolution (Nearest Neighbor, Regularized Inverse Filter, Fast Iterative) *		
	Basic 3D Rendering view (powered by arivis®)		

* ZEN (blue edition) only

6

Your Flexible Choice of Components

ZEN features the following module packages:

Task	Module	ZEN provides:
Basic	ZEN	Detector Control, Axiocams and PMTs from ZEISS included, third party devices optionally available
		Laser-/Lasermodule-Control
		Microscope Control
	Third-party Import	Import third party images with BioFormats specification
	Correlative Array Tomography	Use Serial Sections to reconstruct your Sample Volume in 3D
	Shuttle & Find	Relocate the regions of interest of your sample between light and electron microscopes from ZEISS
	Connect	Correlate, fuse and compile images and data from different sources
	Macro Environment	Use a programming language to generate macros ZEN (black edition): VBA, ZEN (blue edition): Python
	Basic 3D Deconvolution	Improve Z-stacks and restore 3D information with basic deconvolution algorithms
	APEER connector *	Built-in connector to cloud-based digital microscopy platform APEER
Acquisition	Multi Channel	Record different fluorescence and transmitted light images in independent channels
	Time Lapse	Record images over time
	Z Stack	Record Z-stacks with the help of a motorized focus drive
	Manual Extended Focus *	Acquire images manually and calculate a 2D image out of a Z-stack
	Autofocus	Determine the focus position of your specimen
	Tiles & Positions	Record exact, highly resolved images by automatically scanning pre-defined specimen areas Produce images with the help of position lists. Configure tile regions and individual positions
	Panorama *	Manually or automatically acquire highly resolved overview images from individual 2D images
	Experiment Designer	Configure non-homogeneous imaging experiments
	ROI-HDR **	Acquire and display HDR image data with extended dynamic range, incl. illumination blanking
	Counting **	Work with imaging and counting mode, including basic FCS data acquisition

* ZEN (blue edition) only
** ZEN (black edition) only

Your Flexible Choice of Components

Select your modules according to your requirements

Task	Module	ZEN provides:
Processing	Extended Focus	Calculate a 2D image out of a 3D Z-stack
	Deconvolution	Improve Z-stacks and restore 3D information with deconvolution algorithms, optionally with very fast graphics card (GPU) based processing
	3Dxl Viewer – powered by arivis®	Render very large 3D image stacks using ray tracing
	Spectral Unmixing	Perform spectral unmixing of lambda stacks or multichannel images, via reference spectra or component analysis
	Colocalisation	Analyze colocalisation between two fluorescence channels quantitatively
	Direct Processing	Process images with Deconvolution or Airyscan processing already during acquisition for fast results
Analysis	Measurement	Use extended interactive measurement tools
	Image Analysis	Use an assistant to create an automatic measurement program
	Advanced Processing & Analysis	Add Acquisition-feedback capability and hierarchical measurements to your Image Analysis
	FRAP Efficiency Analysis	Analyze acquired FRAP/FLAP or similar time series with bleach events, including mean ROI measurements**
	FRET	Analyze FRET data with either sensitized emission or acceptor photobleaching method, including mean ROI measurement**
	Physiology (Dynamics)	Analyze physiological time series data
	FCS for GaAsP**	Analyze single molecules with GaAsP and APD detectors, FCS, spectral FCS and FCCS
	Enhanced FCS**	Perform interactive and global fitting using extended and self defined fit models
	Photon Counting Histogram**	Histogram of the photon counting populations for all FCS systems
	Image Correl. Spectro. RICS**	Analyze single molecules with Raster Image Correlation Spectroscopy for LSM 880 with PMT or GaAsP detectors
	Confocal Topography	Analyze surface data and visualize measurement results
	Intellesis	Use machine learning to train and classify image datasets for advanced analysis
	Intellesis & Analysis	Module bundle including both Intellesis and Image Analysis

* ZEN (blue edition) only
** ZEN (black edition) only

Your Flexible Choice of Components

ZEN fits all your needs: depending on your microscope hardware the following ZEN packages are available.

Product | **Modules**

Legend:
- ● Included in ZEN (blue edition)
- ● Included in ZEN (black edition)
- ◉ Optional in ZEN (blue edition)
- ◉ Optional in ZEN (black edition)

ZEN system
Laser based **3D Imaging Systems**

(flow: Laser Control › Microscope Control › Detector Control* › ZEN system)

Module	Blue	Black
Measurement	Included	Included
Image Analysis	Included	Included
Advanced Processing & Analysis	Optional	—
Shuttle & Find	Optional	Optional
Confocal Topography	Optional	—
Third-Party Import	Optional	—
Connect Entry	Included	—
Intellesis	Optional	—
Deconvolution	Optional	Optional
Colocalisation	Included	Included
3Dxl	Optional	Optional
Spectral Unmixing ****	Included	Included
Physiology (Dynamics)	Optional	Optional
FRAP Efficiency Analysis	Optional	Optional
FRET	Optional	Optional
Connect Advanced	Optional	—
Experiment Designer	Optional	Optional
Counting	Optional	—
Macro Environment	Optional	Optional
ROI-HDR	Optional	—
Enhanced FCS	—	Optional
FCS for GaAsP and APD	—	Optional
Photon Count. Histogram	—	Optional
Image Correl. Spectro. RICS	—	Optional
Multi Channel	Included	Included
Z Stack	Included	Included
Time Lapse	Included	Included
Tiles & Positions	Optional	Optional
Panorama	Included	—
Autofocus	Included	Included
Extended Focus	Included	Included
Man. Ext. Focus	Included	Included
Correlative Array Tomography	Optional	—
Direct Processing	Optional	—
Intellesis & Analysis	Optional	—

ZEN desk
Offline tasks only

(flow: ZEN desk)

Module	Blue	Black
Measurement	Included	Included
Image Analysis	Included	Included
Advanced Processing & Analysis***	Optional	—
Confocal Topography	Optional	—
Third-Party Import	Optional	—
Connect Entry	Included	—
Connect Advanced	Optional	—
Intellesis	Optional	—
Deconvolution	Optional	Optional
Colocalisation	Optional	Included
3Dxl	Optional	Optional
Spectral Unmixing	Included	Included
Physiology (Dynamics)	Optional	Optional
FRAP Efficiency Analysis	Optional	Optional
FRET	Optional	Optional
Intellesis & Analysis	Optional	—
Macro Environment	Optional	Optional
Enhanced FCS	—	Optional
FCS for GaAsP and APD	—	Optional
Photon Count. Histogram	—	Optional
Image Correl. Spectro. RICS	—	Optional
Direct Processing	Optional	—
Intellesis & Analysis	Optional	—
Tiles & Positions**	Optional	—
Extended Focus	Included	Included

* Detectors from ZEISS (Axiocams, PMTs, etc.) included, 3rd party device control optionally available
** Only stitching and processing of existing data
*** Requires "Image Analysis" to allow creation of Measurement Programs
**** Only available for LSM images

Your Flexible Choice of Components

ZEN fits all your needs: depending on your microscope hardware the following ZEN packages are available.

Product	Modules	● Included in ZEN (blue edition)
		◉ Optional in ZEN (blue edition)

ZEN pro
Imaging Systems and Microscopes with Camera

Microscope Control › Camera Control* › **ZEN pro**

Measurement ●	Image Analysis ◉	Connect Entry ●	Deconvolution ◉	Colocalisation ◉	3Dxl ◉	Experiment Designer ◉	Advanced Processing & Analysis** ◉
Multi Channel ●	Z Stack ◉	Time Lapse ◉	Tiles & Positions ◉	Panorama ●	Autofocus ◉	Extended Focus ◉	Man. Ext. Focus ●
Macro Environment ◉	Physiology (Dynamics) ◉	Third-Party Import ◉	Connect Advanced ◉	Correlative Array Tomography ◉	Shuttle & Find ◉	Intellesis ◉	FRET ◉
Direct Processing ◉	Intellesis & Analysis ◉						

ZEN lite

Axiocam Control › **ZEN lite**

Measurement ◉	Image Analysis ◉	Connect Entry ◉	Third-Party Import ◉	Connect Advanced *** ◉	Intellesis ◉	Intellesis & Analysis ◉
Multi Channel ◉	Time Lapse ◉	Panorama ●	Man. Ext. Focus ●			

*   Axiocams included, other cameras optionally available
**   Requires "Image Analysis" for creation of Measurement Programs
*** Requires ZEN lite Connect Entry

Technical Specifications

Legend:
- ● Included in ZEN (blue edition)
- ◉ Optional in ZEN (blue edition)
- ● Included in ZEN (black edition)
- ◉ Optional in ZEN (black edition)

Product / Option		ZEN lite	ZEN desk	ZEN pro	ZEN system	ZEN desk (black)	ZEN system (black)
Basis	ZEN	●	●	●	●	●	●
Tools	Control of Axiocams	●		●	●		●
	PMT Control						●
	Other Cameras			◉	◉		●
	Laser- / Lasermodule-Control				●		●
	Microscope Control			●	●		●
	Basic 3D Deconvolution		●	●	●		
	Macro Environment		◉	◉	◉	◉	◉
Acquisition	Multi Channel	◉		●	●		●
	Time Lapse	◉		◉	●		●
	Z Stack			◉	●		●
	Manual Extended Focus	●		●	●		
	Autofocus			◉	●		●
	Tiles & Positions			◉	◉	◉ *	◉
	Panorama	●		●	●		
	Experiment Designer			◉	◉	◉	◉
	ROI-HDR					◉	◉
	Shuttle & Find			◉	◉		◉
	Correlative Array Tomography			◉	◉		
	Connect Advanced	◉ **	◉	◉	◉		
	Connect Entry	◉	●	●	●		
	Counting						◉

* Only stitching and processing of existing data

** Requires ZEN lite Connect Entry

Technical Specifications

Legend:
- ● Included in ZEN (blue edition)
- ○ Optional in ZEN (blue edition)
- ● Included in ZEN (black edition)
- ○ Optional in ZEN (black edition)

Product / Option		ZEN lite	ZEN desk	ZEN pro	ZEN system	ZEN desk	ZEN system
Processing	Extended Focus		●	○	●	●	●
	Deconvolution		○	○	○	○	○
	3Dxl, powered by arivis®		○	○	○	○	○
	Spectral Unmixing					●	●
	Colocalisation		○	○	●	●	●
	Direct Processing		○	○	○		
Tools	Measurement	○	●	●	●	●	●
	Image Analysis	○	●	○	●	●	●
	Advanced Processing & Analysis		○	○	○		
	FRAP Efficiency Analysis		○		○	○	○
	FRET		○	○	○	○	○
	Physiology (Dynamics)		○	○	○	○	○
	Enhanced FCS					○	○
	FCS for GaAsP					○	○
	Photon Counting Histogram					○	○
	Image Correl. Spectro. RICS					○	○
	Third-Party Import	○	○	○	○		
	Intellesis	○	○	○	○		
	Intellesis & Image Analysis		○	○	○		
	Confocal Topography		○		○		

Count on Service in the True Sense of the Word

Because the ZEISS microscope system is one of your most important tools, we make sure it is always ready to perform. What's more, we'll see to it that you are employing all the options that get the best from your microscope. You can choose from a range of service products, each delivered by highly qualified ZEISS specialists who will support you long beyond the purchase of your system. Our aim is to enable you to experience those special moments that inspire your work.

Repair. Maintain. Optimize.

Attain maximum uptime with your microscope. A ZEISS Protect Service Agreement lets you budget for operating costs, all the while reducing costly downtime and achieving the best results through the improved performance of your system. Choose from service agreements designed to give you a range of options and control levels. We'll work with you to select the service program that addresses your system needs and usage requirements, in line with your organization's standard practices.

Our service on-demand also brings you distinct advantages. ZEISS service staff will analyze issues at hand and resolve them – whether using remote maintenance software or working on site.

Enhance Your Microscope System.

Your ZEISS microscope system is designed for a variety of updates: open interfaces allow you to maintain a high technological level at all times. As a result you'll work more efficiently now, while extending the productive lifetime of your microscope as new update possibilities come on stream.

Profit from the optimized performance of your microscope system with services from ZEISS – now and for years to come.

>> www.zeiss.com/microservice
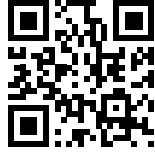
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