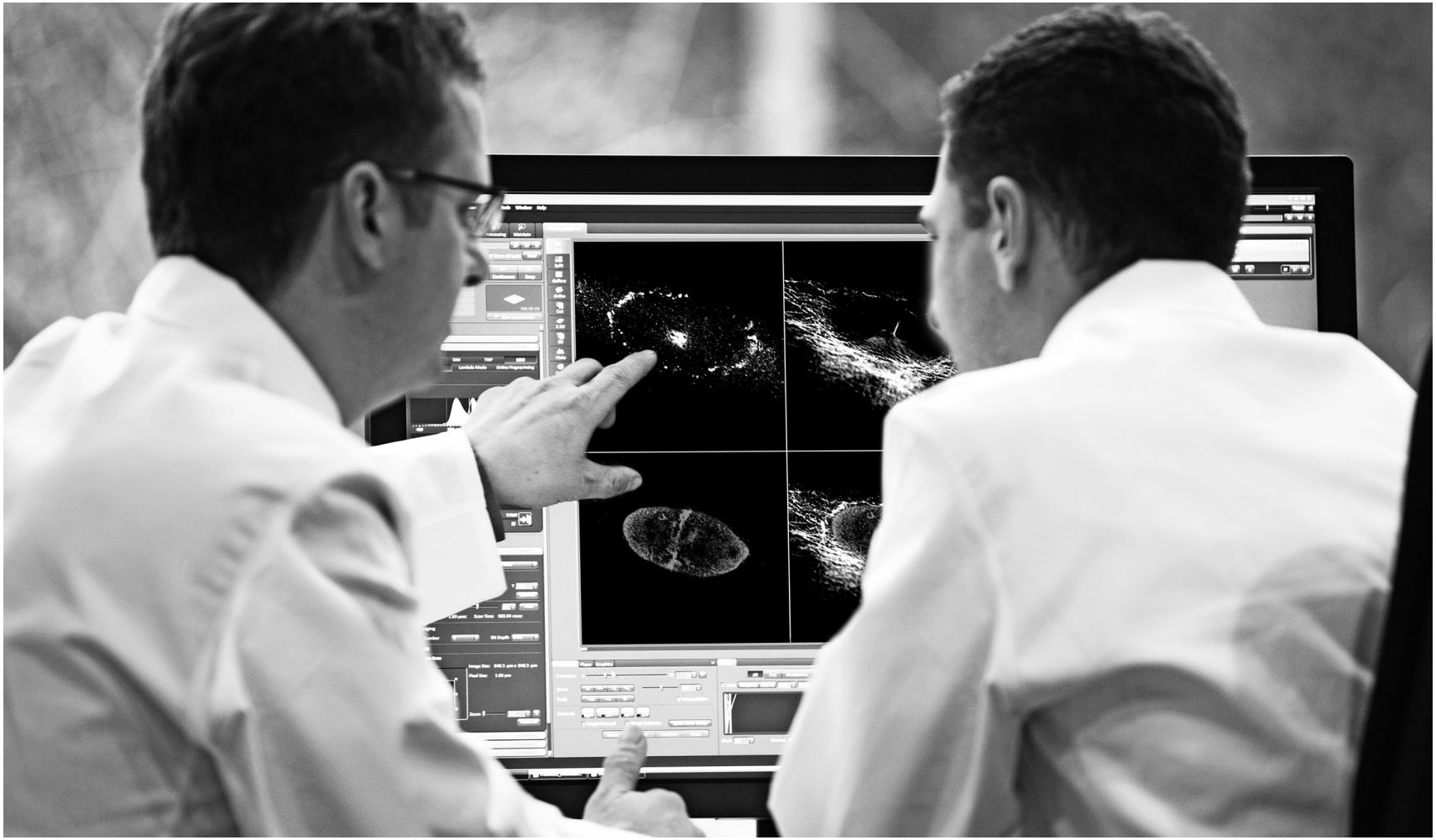


Product Information
Version 2.0

ZEN Imaging Software

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

We make it visible.

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.

ZEN: Simpler. More Intelligent. More Integrated.

ZEN: The Essentials Count – Focus on What You Need

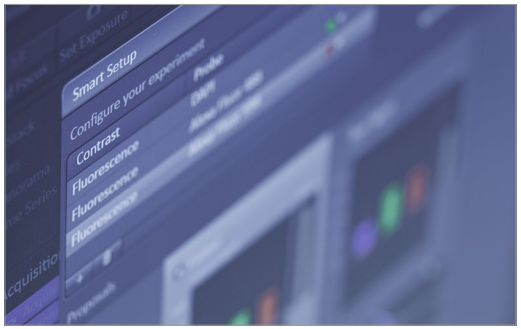
ZEN controls all imaging systems from ZEISS, letting you operate all of your devices with the same convenient interface. ZEN arranges operating elements in a way that follows your workflow. Functions you use only rarely are hidden away, out of sight – but always there with a single click.

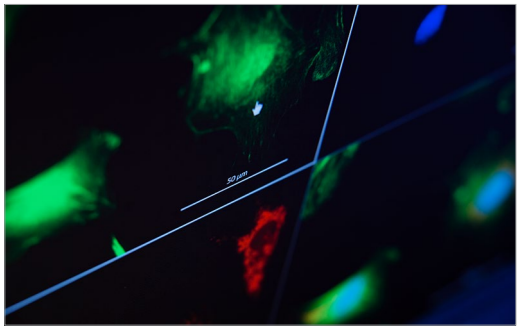
Smart Setup: Select Fluorophore. Acquire. Done.

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.

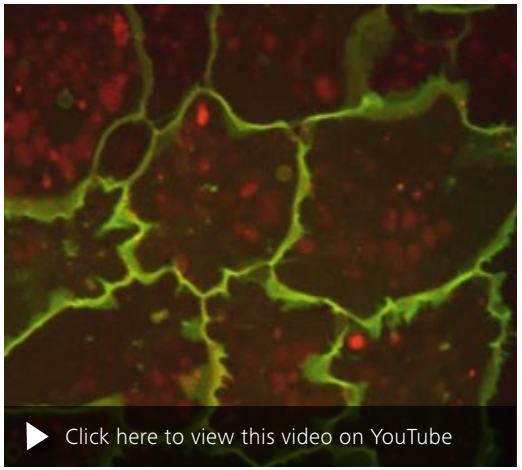




ZEN at Work

- 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

Zebrafish blood



Xenopus explant

Drosophila embryo

Tobacco cells

ZEN: 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 (LSM 780, LSM 710, Cell Observer SD, Laser TIRF 3)

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: creation of 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

ZEN: 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. Re-Use 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 2002-2012 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		

ZEN: 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
	Macro Recorder and Editor	Use a programming language to generate macros ZEN (black edition): VBA, ZEN 2012 (blue edition): Python
	Visual Macro Editor, VME	Use symbols to generate macros for complex acquisition strategies
	Visual Basic Macro, VBA	Use a macro recorder or freely program VBA code
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 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

ZEN: 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 with 3D deconvolution algorithms
	3D VisArt	Visualize and render 3D image stacks
	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
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 plus	Analyze FRET data with either sensitized emission or acceptor photobleaching method, including mean ROI measurement
	3D Analysis	Evaluate and display 3D image data stacks with various measuring tools
	ASSAYbuilder	Carry out “high content” analyses (HCA) of .zvi images
	Physiology	Analyze physiological time series data
	FCS for GaAsP and APD	Analyze single molecules with GaAsP and APD detectors, FCS, spectral FCS and FCCS with LSM 780, LSM BiG and ConfoCor 3
	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 710 with PMT or GaAsP detectors
	Topo	Analyze surface data and visualize measurement results

ZEN: 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)
● Included in ZEN (black edition)
◎ Optional in ZEN (black edition)

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

Laser Control → Microscope Control → Detector Control* → **ZEN system**

Measurement ● ●	Image Analysis ● ●	3D Analysis ◎	ASSAY builder ◎	Advanced Processing & Analysis ◎	Shuttle & Find ◎ ◎	Visual Basic Macro ◎	
Deconvolution ◎	Colocalisation ● ●	3D VisArt ◎ ◎	Topo ◎	Spectral Unmixing ●	Physiology ◎ ◎	FRAP Efficiency Analysis ◎	FRET plus ◎
Experiment Designer ◎ ◎	Visual Macro Editor, VME ◎	Macro Recorder and Editor ◎ ◎	ROI-HDR ◎	Enhanced FCS ◎	FCS for GaAsP and APD ◎	Photon Count. Histogram ◎	Image Correl. Spectro. RICS ◎
Multi Channel ● ●	Z Stack ● ●	Time Lapse ● ●	Tiles & Positions ◎ ◎	Panorama ◎	Autofocus ● ●	Extended Focus ● ●	Man. Ext. Focus ◎

ZEN desk
Offline tasks only

ZEN desk

Measurement ● ●	Image Analysis ● ●	3D Analysis ◎	ASSAY builder ◎	Topo ◎	Advanced Processing & Analysis*** ◎	
Deconvolution ◎	Colocalisation ◎ ●	3D VisArt ◎ ◎	Spectral Unmixing ●	Physiology ◎ ◎	FRAP Efficiency Analysis ◎	FRET plus ◎
Visual Macro Editor, VME ◎	Macro Recorder and Editor ◎ ◎	ROI-HDR ◎	Enhanced FCS ◎	FCS for GaAsP and APD ◎	Photon Count. Histogram ◎	Image Correl. Spectro. RICS ◎
Tiles & Positions** ◎	Extended Focus ● ●	Visual Basic Macro ◎				

* 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

ZEN: 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 ◎	ASSAY builder ◎	Deconvolution ◎	Colocalisation ◎	3D VisArt ◎	Experiment Designer ◎	Advanced Processing & Analysis** ◎
Multi Channel ●	Z Stack ◎	Time Lapse ◎	Tiles & Positions ◎	Panorama ◎	Autofocus ◎	Extended Focus ◎	Man. Ext. Focus ◎
Macro Recorder and Editor ◎	Physiology ◎						

ZEN lite

AxioCam Control | **ZEN lite**

Measurement ◎	Image Analysis ◎		
Multi Channel ◎	Time Lapse ◎	Panorama ◎	Man. Ext. Focus ◎

* AxioCams included, other cameras optionally available

** Requires "Image Analysis" for creation of Measurement Programs

Technical Specifications

● 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
Basis	ZEN	●	●	●	●	●	●
Tools	Control of AxioCams	●		●	●		●
	PMT Control						●
	Other Cameras			◎	◎		
	Laser- / Lasermodule-Control				●		●
	Microscope Control			●	●		●
	Visual Macro Editor, VME					◎	◎
	Macro Recorder and Editor		◎	◎	◎	◎	◎
Acquisition	Multi Channel	◎		●	●		●
	Time Lapse	◎		◎	●		●
	Z Stack			◎	●		●
	Manual Extended Focus	◎		◎	◎		
	Autofocus			◎	●		●
	Tiles & Positions			◎	◎	◎*	◎
	Panorama	◎		◎	◎		
	Experiment Designer			◎	◎	◎	◎
	ROI-HDR					◎	◎
	Shuttle & Find			◎	◎		◎
Processing	Extended Focus		●	◎	●	●	●
	Deconvolution		◎	◎	◎		
	3D VisArt		◎	◎	◎	◎	◎
	Spectral Unmixing					●	●
	Colocalisation		◎	◎	●	●	●

* Only stitching and processing of existing data

Technical Specifications

● 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
Analysis	Measurement	○	●	●	●	●	●
	Image Analysis	○	●	○	●	●	●
	Advanced Processing & Analysis		○	○	○		
	FRAP Efficiency Analysis					○	○
	FRET plus					○	○
	3D Analysis					○	○
	ASSAYbuilder		○	○	○		
	Physiology		○	○	○	○	○
	Enhanced FCS					○	○
	FCS for GaAsP and APD					○	○
	Photon Counting Histogram					○	○
	Image Correl. Spectro. RICS					○	○
	Topo					○	○

Technical Specifications

System requirements

ZEN lite	ZEN pro / ZEN desk	ZEN system
Intel® Core 2 Duo E8400 3.0 GHz	Intel® Core 2 Duo E8400 3.0 GHz	Intel® Xeon X5650 6-Core 2.66 GHz
Intel® iQ45 chipset	Intel® iQ45 chipset	Intel® 5520 (Dual) chipset
4 GB DDR3-RAM	4 GB DDR3-RAM	6 GB DDR3-RAM
	Graphics interface PCIe x16	Graphics interface PCIe x16
	Graphics adapter 1920 x 1200 resolution, 32-bit true color, 128 MB RAM, DirectX 8.0 or higher	Graphics adapter ATI FirePro 2560 x 1600 resolution, 32-bit true color, 512 MB RAM, DirectX 8.0 or higher
	Monitor 20" TFT 1600 x 1200	Monitor 20" TFT 1600 x 1200
	Hard disk 160 GB SATA2, DVD-ROM drive	Hard disk 1x 250 GB SATA2 (configured as 250 GB hard drive) and 4x 1 TB SATA2 (configured as 2 TB RAID 10 hard drive), DVD-ROM drive
	1x free PCI slot 5 V, 32-bit (PCI specification 2.1) non shared interrupt, to insert camera interfaces	1x free PCI slot 5 V, 32-bit (PCI specification 2.1) non shared interrupt, to insert camera interfaces
		1x free PCI Express Generation 2.0 x16 full height slot
		Trigger board and Signal Distribution Box
1x FireWire IEEE 1394a interface	2x FireWire IEEE 1394a interface	2x Firewire IEEE 1394a interface
	2x serial interfaces (COM1 and COM2)	4x serial interfaces (COM1 – COM4)
2x USB interfaces	2x USB interfaces	4x USB interfaces
Microsoft® Windows® 7 64-bit Ultimate (Multilanguage), no special customer adapted versions	Microsoft® Windows® 7 64-bit Ultimate (Multilanguage), no special customer adapted versions	Microsoft® Windows® 7 64-bit Ultimate (Multilanguage), no special customer adapted versions

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 it – 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.

Please note that our service products are always being adjusted to meet market needs and maybe be subject to change.

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

>> www.zeiss.com/microservice

The moment your data change scientific minds.

This is the moment we work for.

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We make it visible.