Product Information
Version 1.0

ZEISS Primo Vert

Your Phase-contrast Microscope for Rapidly Analyzing Living Cells

reddot design award
winner 2010

ZEISS
We make it visible.

Examine Living Cells – Quickly and Efficiently

Analyze living cells at your cell culture laboratory and in your research projects. With your Primo Vert microscope, you can quickly and efficiently assess the morphology and development of living cells. The inverted microscope is perfect for both cancer and genetic research. Primo Vert is compact and fits directly into your laminar flow cabinet.

All of ZEISS' experience in light microscopy has flowed into the development of Primo Vert, which is specially adapted to your demanding environmental conditions when working with living cells.

Animation

Simpler. More Intelligent. More Integrated.

Created for Continuous Use in Cell Culture Labs

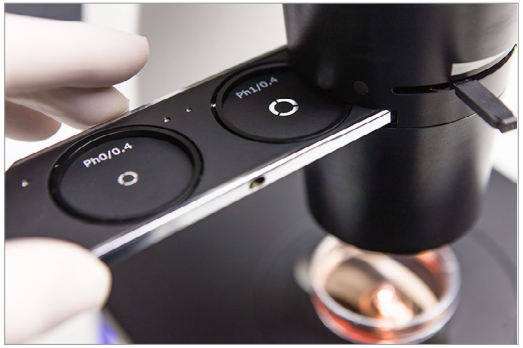
Primo Vert makes routine jobs in your cell culture lab easier. In walk-away mode, Primo Vert's light turns off automatically after 15 minutes. This saves electricity and increases the lifetime of your light source. To conveniently expand the working distance of your Primo Vert, for example to work with culture bottles, you can simply remove the condenser.

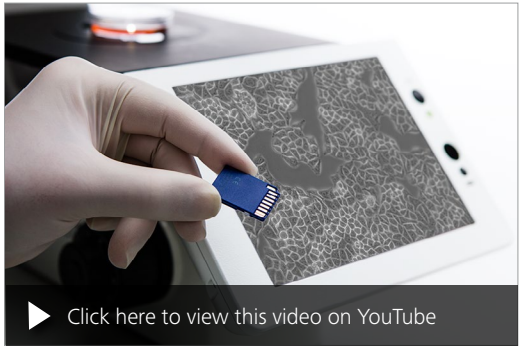
Ergonomics is a Question of Cost-Effectiveness

Your Primo Vert has a universal phase slider for all objective lenses – you use a single phase ring Ph1 for 10×, 20×, and 40× magnification, eliminating the need to adjust the phase position when changing the magnification level. Or you can use the Ph2 objective lenses and benefit from impressive resolution and image quality. You can view your microscope samples with a 30-watt halogen bulb or use the stable color temperature and long life of an LED light – the decision is all yours.
With Primo Vert Ergo and the ergotube, which allows you to adjust the viewing angle, you can work comfortably either standing or sitting.

Unpack and Use: Your ZEISS Primo Vert Monitor Complete Solution

The Primo Vert Monitor complete solution is designed for unrivaled convenience – your Primo Vert Monitor saves you from having to attach the adapter and camera and adjust any camera settings. Multiple users can discuss the image on the monitor as a team. The monitor itself can tilt based on your needs from 45 to 80 degrees. Using the USB port in the stand of your Primo Vert Monitor, you always have the ability to connect the microscope to a computer and edit your images using ZEN lite imaging software. Or alternatively, you can also simply save your images to an SD card without a PC.





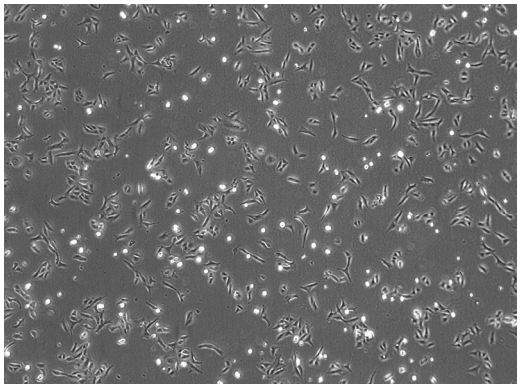
Tailored Precisely to Your Applications

Typical Applications, Typical Specimens	Task	ZEISS Primo Vert Offers
Cell Culture	Cell cultures for in vitro research into higher-order plant types using methods of molecular biology	Phase contrast: With this contrast method you can create high-contrast images of unstained samples. You can analyze the growth and condition of living cells at a glance.Inverse Stand: Primo Vert offers space for petri dishes. Compact design: Cancer cells are cultivated in incubators for research purposes. Primo Vert fits directly below your laminar flow cabinet. With Primo Vert Monitor, you can capture your images with the remote control without having to place your hands into the laminar flow cabinet. Ergonomics: The viewing angle of Primo Vert Ergo can be quickly adjusted to match your body size. This means every member of your research team can examine under the microscope in a comfortable position. With Primo Vert Photo, you can document your images for quality management.
	Transfer of transgenes in the genome from plastids	
	Regularly analyzing cell growth and cell properties	
	Cancer Research	
	Analyzing tissue changes, evaluating cancer cells (tumor type)	
	Cancer research using tissue samples or cultures such as HeLa cells or U2OS	
	Evaluating cell properties and cell components, deciding on their use in further experiments, receptors for hormone and growth factors	
	Botany	
	Examining algae with regard to carbon fixation and oxygen production (photosynthesis)	
	Phylogenetics	
	Researching the structure of plant cells and tissues, reproduction, growth, metabolic processes, and pathogens	
	Food Industry, Food Monitoring	
	Analysis of the effects of flavor enhancers and aromas	
	Analyzing the ingredients and additives, undesirable and prohibited substances like fungal poisons, heavy metals	

Tailored Precisely to Your Applications

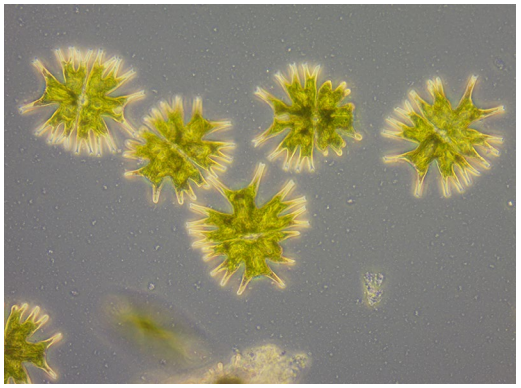
Typical Applications, Typical Specimens	Task	ZEISS Primo Vert Offers
Cell Culture	**Genetic Engineering** Genetic modification of DNA sequences to change cultured plants, manufacturing pharmaceuticals, or gene therapy Regularly analyzing cell growth and cell properties to determine the optimal time of modification Improving resistance against diseases, herbicides, and pesticides **Pharmacology** Evaluating the effects of drugs and chemicals on living cells **Agriculture and Environmental Research** Evaluating the effectiveness of plant protection products and the resistance of plants	Phase contrast: With this contrast method you can create high-contrast images of unstained samples. You can analyze the growth and condition of living cells at a glance. Inverse stand: Primo Vert offers space for petri dishes. Compact design: Cancer cells are cultivated in incubators for research purposes. Primo Vert fits directly below your laminar flow cabinet. With Primo Vert Monitor, you can capture your images here with the remote control without having to place your hands into the laminar flow cabinet. Ergonomics: The viewing angle of Primo Vert Ergo can be quickly adjusted to match your body size. This means every member of your research team can examine under the microscope in a comfortable position. With Primo Vert Photo, you can document your images for quality management.

ZEISS Primo Vert at Work

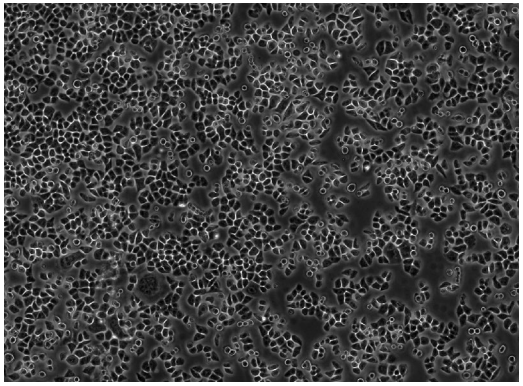


U2OS cells
Magnification 4×, phase contrast

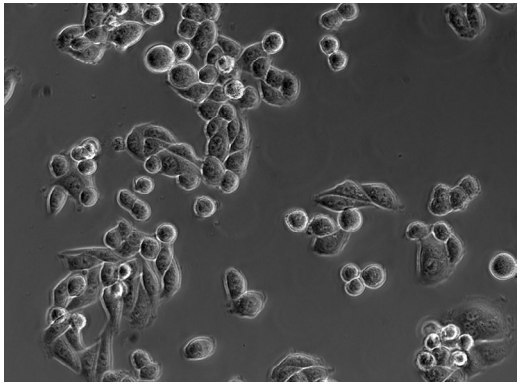
Formation of conidia in powdery mildew on sage
Magnification 40×.
Sample: courtesy of Julius Kühn Institute, Braunschweig, Germany



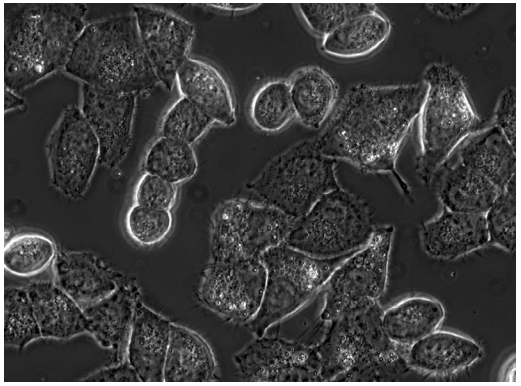
Micrasterias radiata
Magnification 40×, phase contrast



HeLa cells
Magnification 4×, phase contrast



HeLa cells
Magnification 20×, phase contrast



HeLa cells
Magnification 40×, phase contrast

Your Flexible Choice of Components

1 Microscopes

- Primo Vert
- Primo Vert Photo
- Primo Vert Ergo
- Primo Vert Monitor

2 Recommended Objective Lenses

- Plan-ACHROMAT 4×/0.10 HF
- Plan-ACHROMAT 4×/0.10 Ph0
- Plan-ACHROMAT 10×/0.25 Ph1
- LD Plan-ACHROMAT 20×/0.30 Ph1
- LD Plan-ACHROMAT 40×/0.50 Ph1
- LD Plan-ACHROMAT 20×/0.30 Ph2
- LD Plan-ACHROMAT 40×/0.50 Ph2

3 Condensers

- LD condenser 0.3 (working distance: 72 mm)
- LD condenser 0.4 (working distance: 55 mm)

4 Illumination

Transmitted light

- HAL 30 W (halogen)
- LED

5 Cameras

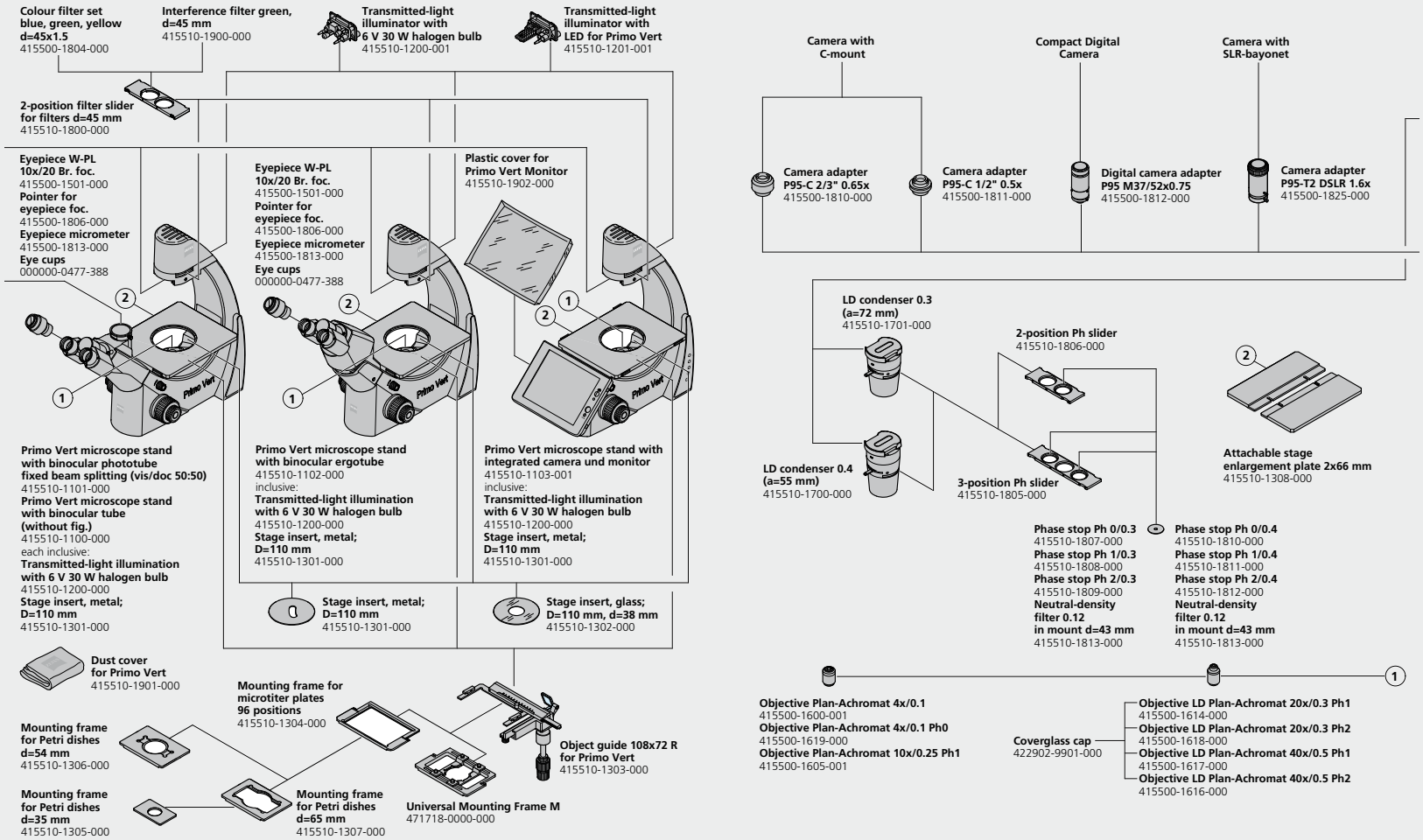
Recommended cameras:

- Axiocam ICc 5
- Axiocam ICc 1
- Axiocam ERc 5s

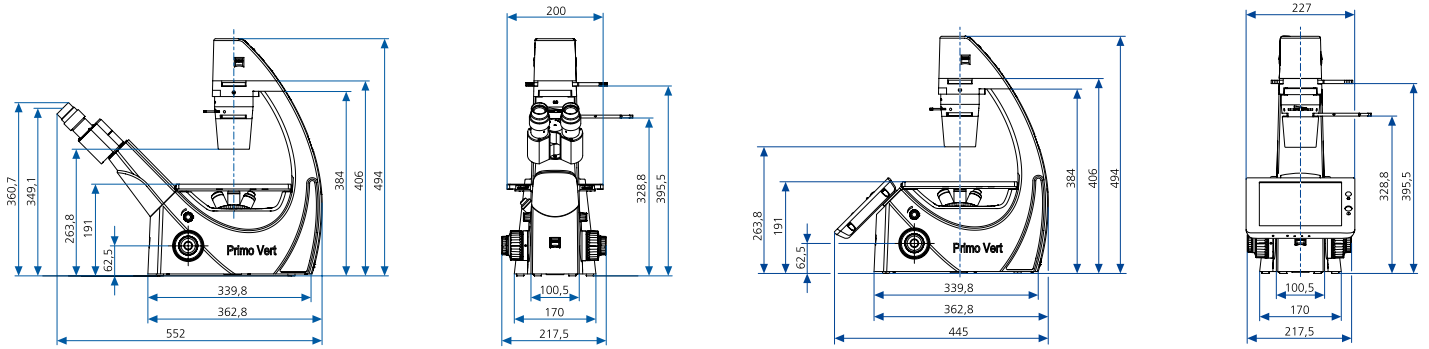
6 Software

- ZEN lite

ZEISS Primo Vert: System Overview



Specifications



Dimensions (width × depth × height)	
Primo Vert	Approx. 261 × 550 × 494 mm
Weight	
Primo Vert (without accessories or packaging)	Approx. 11 kg
Ambient Conditions	
Transportation (in packaging)	
Permissible ambient temperature	–40°C to +70°C
Storage	
Permissible ambient temperature	+10°C to +40°C
Permissible humidity	Max. 75% at 35°C (without condensation)
Operation	
Area of use	Closed spaces
Max. altitude	2,000 m
Permissible ambient temperature	+10°C to +40°C
Permissible humidity	Max. 75% at 35°C (without condensation)

Technical Specifications

Technical Specifications	
Protection class	II
Protection type	IP20
Electrical safety	Pursuant to DIN EN 61010-1 (IEC 61010-1) and in accordance with CSA and UL standards
Degree of pollution	2
Overvoltage category	II
Radio interference suppression	According to EN 61326-1, EN 61326-2-6
Power supply	100 to 240 V (±10%), thanks to the worldwide power adapter, adjusting the voltage of the device is not required.
Power frequency	50/60 Hz
Power consumption (Primo Vert, Primo Vert Photo, Primo Vert Ergo)	30 W; secondary voltage from external 12 V power adapter
Output power supply (Primo Vert, Primo Vert Photo, Primo Vert Ergo)	12 V DC; max. 2.5 A
Power consumption (Primo Vert Monitor)	45 W; secondary voltage from external 12 V power adapter
Output table power supply (Primo Vert Monitor)	12 V DC; max. 5 A
Microscope 12 V / 6 V DC	Adjustable 1.5 V to 6 V
LED class of entire device	Risk group 2 pursuant to IEC 62471

Light Sources	

Halogen Lamp	HAL 6 V, 30 W
Light source adjustment range	Fully adjustable between 1.5 V and 6 V DC
Color temperature at 6 V	2800 K
Luminous power	765 lumens
Average life	100 hours
Illuminated area	1.5 × 1.5 mm

LED Illumination	White-light LED, peak wavelength 450 nm, LED risk group 2 pursuant to IEC 62471
Constant color temperature independent of brightness	7480 K
Homogeneous image field illumination	20 mm diameter
Suitable for objective lenses with magnifications from	4× to 100×
Analog brightness adjustment from	Approx. 15 to 100%
With FOV (field of view) 20	WF 10×/20 Br. foc.

Technical Specifications

Optical and Mechanical Data	
Stand with stage focus	
Using rough adjustment	45 mm/rev
Using fine adjustment	0.5 mm/rev
Total travel	15 mm
Switching objective lenses	Manually using 4x nosepiece turret
Objective Lenses	First-class infinity focus objective lens range with screw thread W 0.8
Eyepieces	30 mm diameter
Object Stage	Fixed
Dimensions (width × depth)	200 × 239 mm
Stage Adjustment	Right
Nonius with number and letter scale	X-axis: number scale; read from right to left. Y-axis: letter scale; read using the mirror
Coaxial drive	Right
LD Condenser 0.3	For Vobj 4× to 40×, a = 72 mm
LD Condenser 0.4	For Vobj 4× to 40×, a = 55 mm
ZEISS Primo Vert	
Maximum field of view	20
Eyepiece distance (pupil distance)	Adjustable from 48 to 75 mm
Viewing angle	45°
Viewing height	350 to 390 mm
Visual output	Tube factor 1×

Specifications

ZEISS Primo Vert Photo	
Maximum field of view	20
Eyepiece distance (pupil distance)	Adjustable from 48 to 75 mm
Viewing angle	45°
Viewing height	350 to 390 mm
Visual output	Tube factor 1×
Photo/video output	Tube factor 1×, interface 60 mm
Fixed split	5% vis / 50% doc

ZEISS Primo Vert Ergo	
Maximum field of view	20
Eyepiece distance (pupil distance)	Adjustable from 48 to 75 mm
Viewing angle	30° to 60°, infinitely adjustable
Viewing height	360 to 480 mm
Visual output	Tube factor 1×

ZEISS Primo Vert Monitor	
Camera	5-megapixel CMOS
Monitor size	8.4"
Display	800 × 600 pixels
Storage medium/SD card	SDHC 4 GB Class 2 memory card
Outputs/Ports	USB 2.0
Camera driver with microscope software	With special configuration tool
Supported operating systems	Windows 7 ×32 or Windows 7 ×64
Remote control for image acquisition	IR remote
SD card-reader adapter	SD/MMC CardReaderWriter 6in1, USB 2.0
Emitted interference	Class A

The images from Primo Vert Monitor should not be used for direct diagnosis.

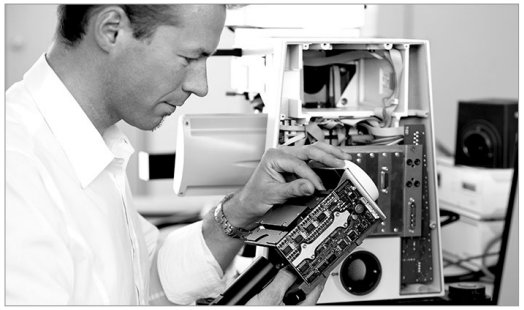
Count on Service in the True Sense of the Word

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

The moment you’re absolutely clear about what you see.

This is the moment we work for.

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We make it visible.

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