



Product Information  
Version 1.0

## **ZEISS Primotech**

Your Smart Imaging Solution: Wirelessly Controlled, Easy to Use



We make it visible.

# Profit from Combined Ease-of-Use and Industry-Readiness in One System

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- › The Applications
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- › Service

Primotech is your clever imaging solution with an attractive price-to-performance ratio. Access multiple microscopes wirelessly through Matscope, the imaging app from ZEISS. Experience the efficient and smooth workflow from image acquisition over analysis to report – profit from fast time-to-results. A choice of stands lets you select the optimal microscope for a wide variety of routine tasks and applications. Primotech combines transmitted and reflected light in a single stand, making it flexible enough to use for all the mechanical, automotive and electronics industry, for PCB inspection and powder analysis.



# Simpler. More Intelligent. More Integrated.

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## Connect Your Lab

Consider the advantages of having the camera integrated into the tube and countless interface options. Matscope, the ZEISS imaging app, makes it easy to connect multiple users and multiple microscopes in your lab and classroom to each other. Share your images and videos wirelessly. Give your students the full mutual learning experience with brilliant images, while moving freely through your classroom. Easily perform measurements: the image files contain all meta-data and can be transferred to a shared folder on the network, or directly sent by e-mail.



## Results You Can Rely On

Primotech helps you achieve fast, dependable results. The 5x nosepiece turret saves time and also eliminates a possible source of error: encoding lets the microscope automatically recognize a change of objective and therefore magnification. The software identifies a reference object and measures it without manual intervention so your measurements are always accurate. LED illumination gives you the benefit of stable color temperature when changing the light intensity. The 3 megapixel camera is integrated into the tube, keeping it perfectly adjusted and dust free in your industrial environment.



## Profit from Tailored Solutions You Can Afford

Choose from several different stands to set up the optimal microscope for your application. Opt for Primotech without the condenser to gain the advantage of unrivaled sample space – up to 34 mm. If you need to avoid electrostatic discharge from the stand to the electronic component samples, equip your Primotech with the ESD stage. Choose the stand with simultaneous transmitted and reflected light to inspect different materials.



# Your Insight Into the Technology Behind It.

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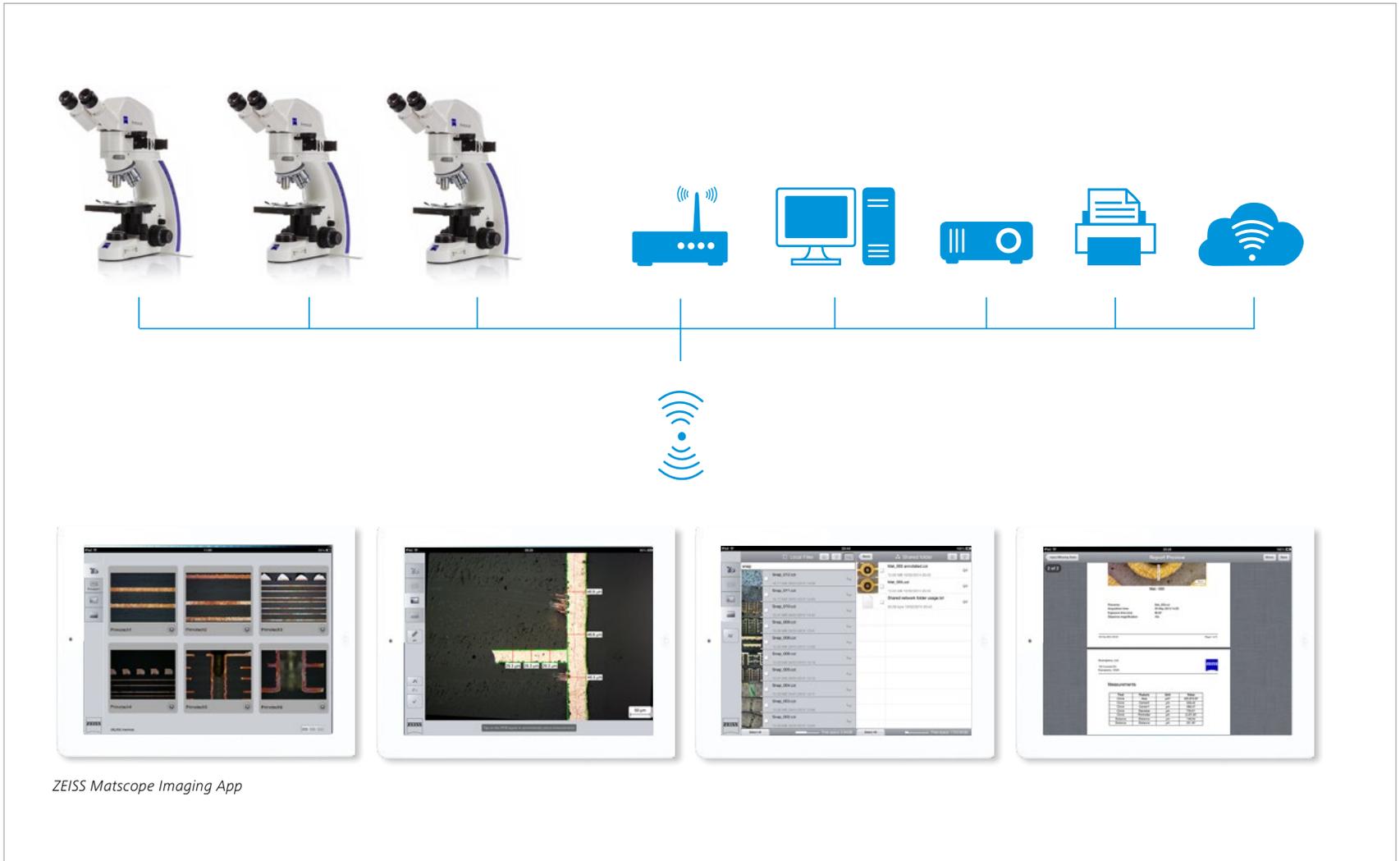
## **ZEISS Matscope – Your Doorway to the Digital World**

With Matscope in combination with Primotech and its integrated camera you receive high-quality images in an easy-to-use way. Matscope is your imaging app, which brings you all the measurement functionality you need. Profit from the advantages of touch-based apps as intuitive as your smartphone, with the reliability and feature set you expect from industry-grade software. Running on your iPad, Matscope is seamlessly integrated into your network, be it a Windows, Mac or Linux environment. You exchange files with any computer. Download Matscope from the App Store for free and experience it with the virtual microscope.



# Expand Your Possibilities

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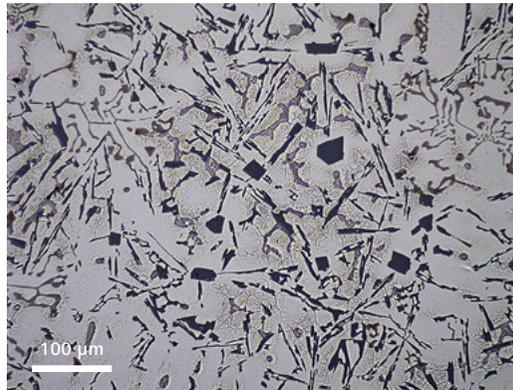
ZEISS Matscope Imaging App

# Tailored Precisely to Your Applications

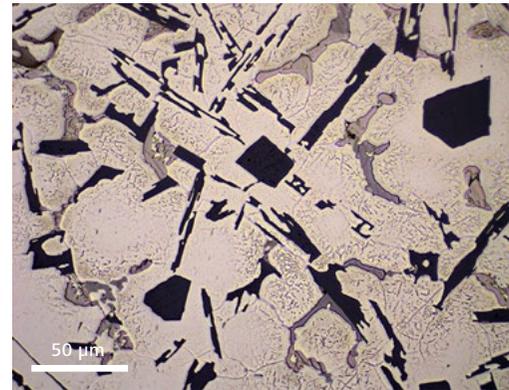
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## Use ZEISS Primotech for Thick, Opaque Materials Samples

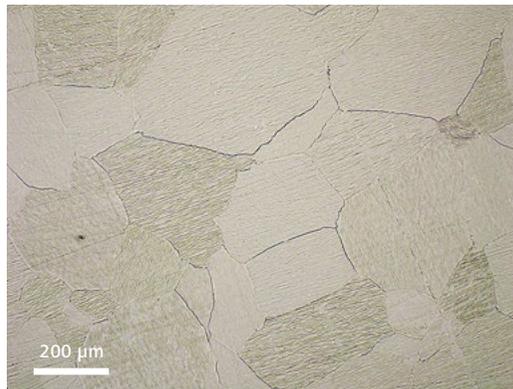
Examine thin to thick metallographic samples to analyze grains, multiphase etc.



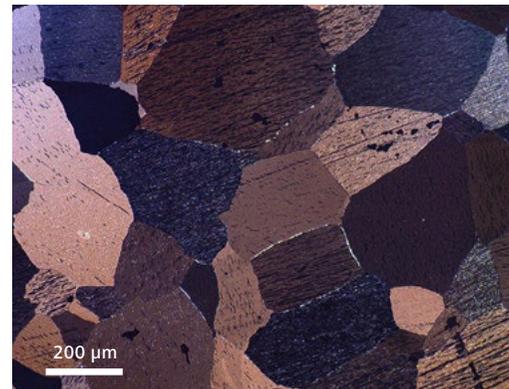
Aluminum-silicon alloy, brightfield, magnification: 200x



Aluminum-silicon alloy, brightfield, magnification: 400x



Zinc metal, brightfield, magnification: 100x



Zinc metal, reflected-light polarization, magnification: 100x

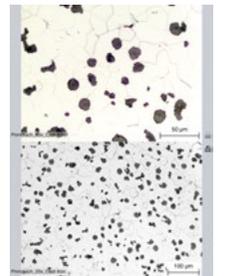
## ZEISS Primotech Offers:

Its large travel range and optional condenser let you examine thin to thick specimens up to 34 mm. For transparent or opaque materials you profit from simultaneous reflected and transmitted light illumination. Use the polarization contrast to analyze birefringent structures.



## ZEISS Matscope Offers:

- Multi phase analysis
- Magnification read out (convenient and reliable results, prevents mistakes)
- 2D measurements
- Extended depth of field
- Easy report

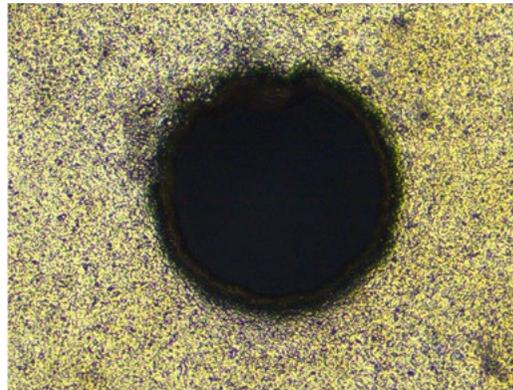


# Tailored Precisely to Your Applications

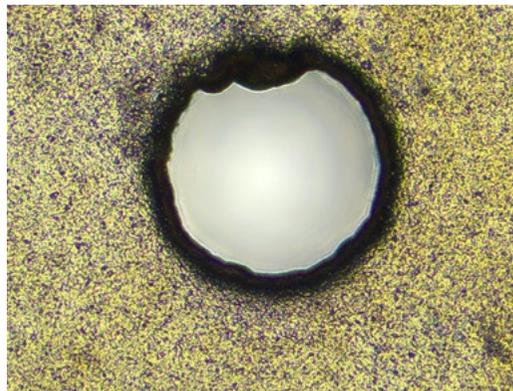
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## Use ZEISS Primotech D/A for Translucent to Transparent, Thin Material Samples

Examine PC boards, PCBA and other electronic products



*PCB drilled hole inspection, reflected light*



*PCB drilled hole inspection, simultaneous reflected and transmitted light*



## ZEISS Primotech D/A Offers:

For tiny holes you profit from simultaneous reflected and transmitted light illumination. If you need to avoid electrostatic discharge from the stand to the electronic component samples, equip your Primotech with the ESD stage.



## ZEISS Matscope Offers:

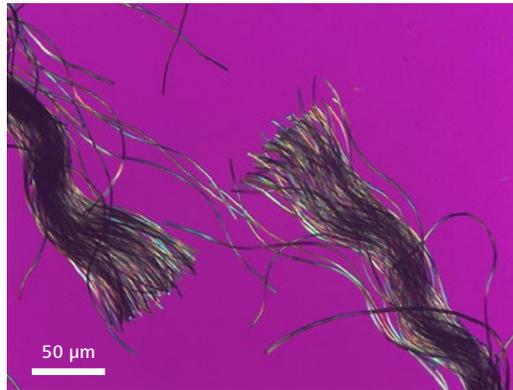
- Semi-automatic layer measurement
- Remote wireless supervision
- Magnification read out (convenient and reliable results, prevents mistakes)
- 2D measurements
- Extended depth of field
- File name templates

# Tailored Precisely to Your Applications

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## Use ZEISS Primotech D/A POL for Translucent to Transparent, Thin Material Samples

Examine plastics, ceramics, crystals, natural and synthetic fibre

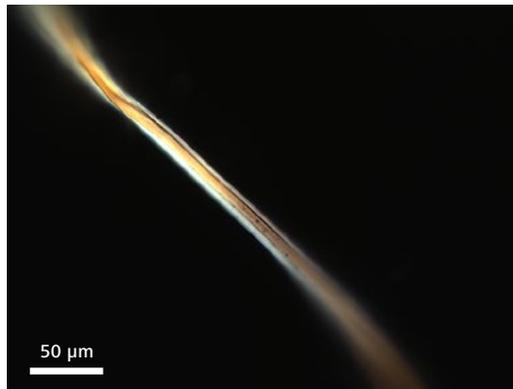


*Polyamid, polarization with lambda plate, magnification: 50x*

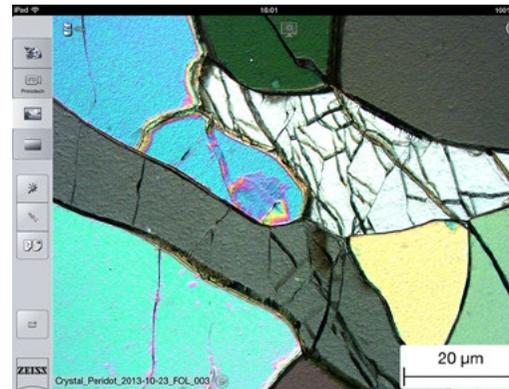


### ZEISS Primotech D/A POL Offers:

Equipped with a pre-centered circular rotating stage, 5 position centerable encoded nosepiece turret, polarization optical components in aligned optical pathway, you can investigate birefringent materials under brightfield and crossed polarization contrasts in either transmitted or reflected illumination.



*Polyamid in crossed polar, magnification: 400x*



### ZEISS Matscope Offers:

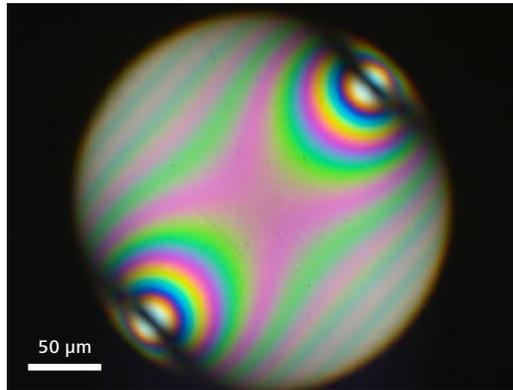
- Remote wireless supervision
- Magnification read out (convenient and reliable results, prevents mistakes)
- 2D measurements
- Extended depth of field
- File name templates

# Tailored Precisely to Your Applications

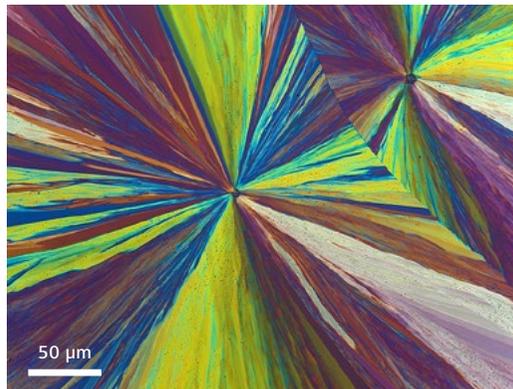
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## Use ZEISS Primotech D POL for Conoscopy of Birefringent Material Samples

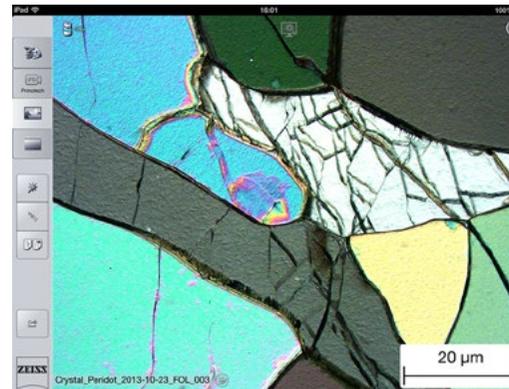
Examine plastics, ceramics, crystals, natural and synthetic fibre



Mylar foil (biaxial-oriented polyethylene terephthalate film),  
conoscopy, magnification: 400x



Veranol in crossed polarization with lambda plate,  
magnification: 200x



### ZEISS Primotech D/POL Offers:

With a conoscopic intermediate part, inserting or removing a focusable Bertrand lens from optical path, you can change over between orthoscopic and conoscopic observation. With a standardized DIN compensator slot, you can opt for compensators for quantitative measurements.

### ZEISS Matscope Offers:

- Remote wireless supervision
- Magnification read out (convenient and reliable results, prevents mistakes)
- 2D measurements
- Extended depth of field
- File name templates

# Configured to Your Requirements

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## 1 Microscopes

- Primotech (simultaneous reflected and simple transmitted light, large samples up to 34 mm)
- Primotech D/A (simultaneous reflected and advanced transmitted light)
- Primotech D/A POL (reflected and transmitted light, polarization contrast)
- Primotech D/POL (transmitted light, orthoscopy and conoscopy)

## 2 Objectives

- Epiplan 5x, 10x, 20x, 50x, 100x for reflected illumination
- A-Plan POL 5x, 10x, 20x, 40x, 63x for transmitted illumination

## 3 Illumination

- LED 3 W 5000 K (brightness equivalent to 50 W HAL lamp) in reflected and transmitted light

## 4 Cameras

- Tube with integrated 3 megapixel CMOS camera
- Tube with integrated 5 megapixel HD streaming camera

## 5 Software

- Matscope iPad APP (free download)\*  
\* Additional features, such as magnification readout, EDF, multiphase and PCB/layer thickness measurements, are dependent on the microscope's network adapter (MNA).

## 6 Accessories

Optic accessories:

- Fixed polarizer, rotatable 360° analyzer
- Compensator Lambda, Lambda/4,
- Quartz wedge 0-4 Lambda, 6x20
- Object guide POL 35 x 30 mm, attachable

Digital software accessories:

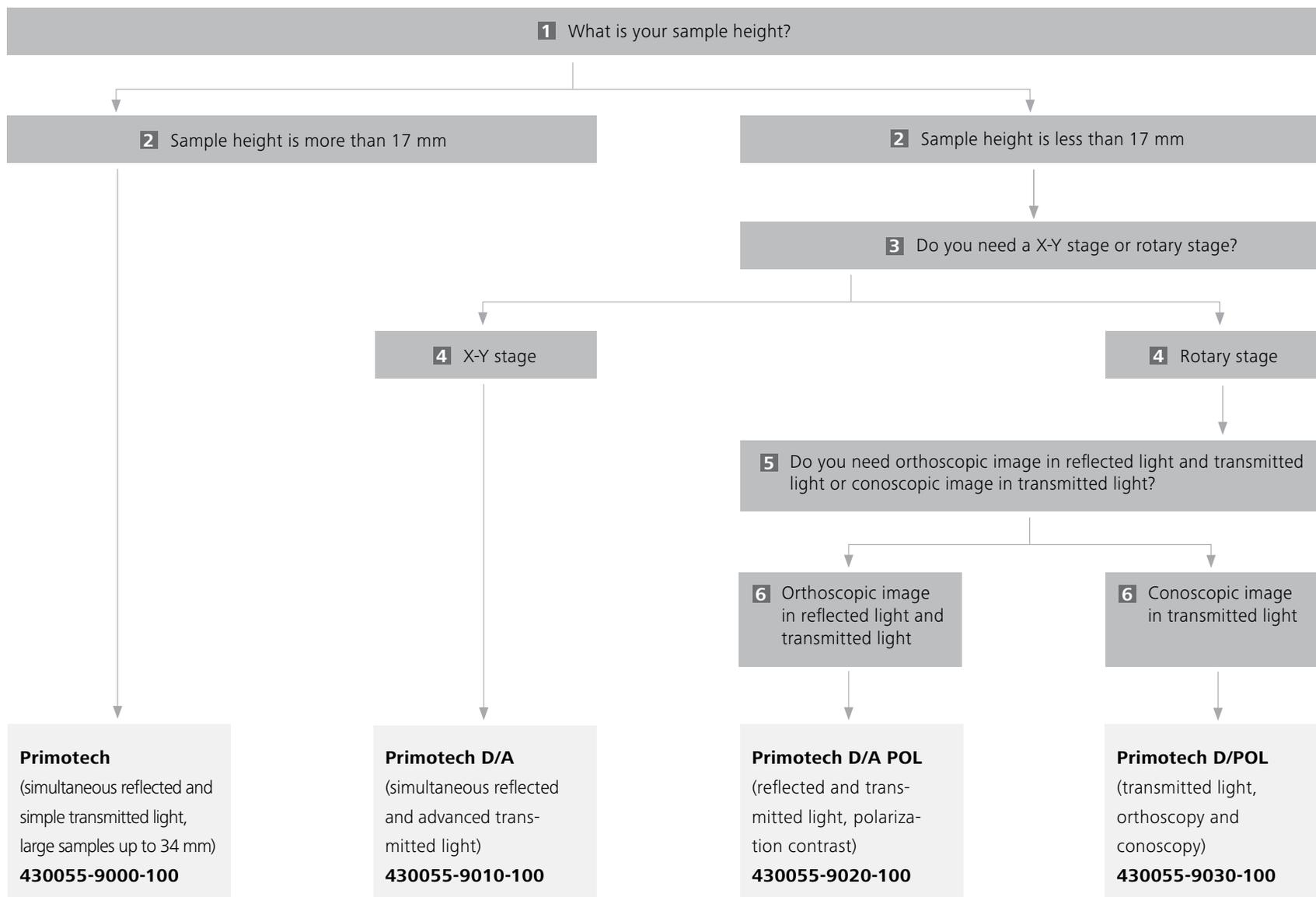
- Interface module MNA advanced
- Interface module MNA basic
- Calibration slide for App

Optional accessories:

- Leveling press, case for transport and storage

# System Overview

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# Technical Specifications

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Microscope	ZEISS Primotech	ZEISS Primotech D/A	ZEISS Primotech D/A POL	Primotech D/POL
<b>Stand</b>	encoded upright microscope, reflected light, simple transmitted light, binotube with integrated 3 megapixel camera	encoded upright microscope, reflected light, transmitted light with Abbe condenser, binotube with integrated 3 megapixel camera	encoded upright microscope, reflected light, transmitted light with Abbe condenser POL 0.9, fixed rotatable polarizer for transmitted light depolarizer, binotube with integrated 3 megapixel camera	encoded upright microscope, Bertrand lens transmitted light with Abbe condenser POL 0.9, fixed rotatable polarizer for transmitted light depolarizer, binocular tube
<b>Illumination</b>	LED (5000 K, brightness equivalent to 50 W HAL) in transmitted light and reflected light simultaneously	LED (5000 K, brightness equivalent to 50 W HAL) in transmitted light and reflected light simultaneously	LED (5000 K, brightness equivalent to 50 W HAL) in transmitted light and reflected light simultaneously	LED (5000 K, brightness equivalent to 50 W HAL) in transmitted light
<b>Contrast</b>	brightfield, oblique, polarization	brightfield, oblique, polarization	brightfield, oblique, polarization	brightfield, orthoscopy, conoscopy
<b>Stage Travel</b>	fixed 75 x 50 mm	fixed x-y ESD stage 75 x 50 mm	pre-center fixed rotatory stage Φ 170 mm	pre-center fixed rotatory stage Φ 170 mm
<b>Sample Height</b>	up to 34 mm	up to 17 mm	up to 17 mm	up to 17 mm
<b>Eyepieces</b>	10X / FOV 20	10X / FOV 20	10X / FOV 20, one with cross hair micrometer	10X / FOV 20, one with cross hair micrometer
<b>Nosepiece Turret</b>	5 positions, encoded	5 positions, encoded	5 positions, centerable, encoded	5 positions, centerable, encoded
<b>Objectives</b>	with W 0.8 mounting thread <ul style="list-style-type: none"> <li>■ Epiplan 5x/0.13, WD = 20.5 mm</li> <li>■ Epiplan 20x/0.4, WD = 4.1 mm</li> <li>■ Epiplan 50x/0.65 WD = 1.6 mm</li> </ul> optional: <ul style="list-style-type: none"> <li>■ Epiplan 10x/0.23, WD = 11.1 mm</li> <li>■ Epiplan 100x/0.8, WD = 1.3 mm</li> </ul>	with W 0.8 mounting thread <ul style="list-style-type: none"> <li>■ Epiplan 5x/0.13, WD = 20.5 mm</li> <li>■ Epiplan 20x/0.4, WD = 4.1 mm</li> <li>■ Epiplan 50x/0.65 WD = 1.6 mm</li> </ul> optional: <ul style="list-style-type: none"> <li>■ Epiplan 10x, 100x</li> </ul>	with W 0.8 mounting thread <ul style="list-style-type: none"> <li>■ Epiplan 5x/0.13, WD = 20.5 mm</li> <li>■ A-Plan 20x/0.45 POL, WD = 0.50 mm</li> <li>■ A-Plan 40x POL/0.65 POL, WD = 0.43 mm</li> </ul> optional: <ul style="list-style-type: none"> <li>■ Epiplan 10x, 20x, 50x, 100x</li> <li>■ A-plan 5x, 10x, 63x POL</li> </ul>	with W 0.8 mounting thread <ul style="list-style-type: none"> <li>■ A-Plan 5x/0.12 POL, WD = 9.9 mm</li> <li>■ A-Plan 20x/0.45 POL, WD = 0.50 mm</li> <li>■ A-Plan 63x/0.8 POL, WD = 0.30 mm</li> </ul> optional: <ul style="list-style-type: none"> <li>■ A-Plan 10x/0.25 POL, WD = 4.2 mm</li> <li>■ A-Plan 40x/0.65 POL, WD = 0.43 mm</li> </ul>
<b>Accessories</b>	polarizer, analyzer, filter sliders leveling press	polarizer, analyzer, filter sliders leveling press	polarizer, analyzer, filter sliders, λ plate, λ/4 plate, quartz wedge, object guide	analyzer slider, λ plate, λ/4 plate, quartz wedge object guide
<b>Weight</b>	approx. 8.5 kg	approx. 9.5 kg	approx. 10.1 kg	approx. 9.8 kg
<b>Dimensions (Width x Depth x Height)</b>	approx. 306 mm x 410 mm x 395 mm (stand with binocular) approx. 306 mm x 396 mm x 450 mm (stand with binocular and integrated camera)			

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<b>Ambient conditions</b>	
<b>Transportation (in Packaging):</b>	
Permissible ambient temperature	-40 to +70 °C
<b>Storage:</b>	
Permissible ambient temperature	+10 to +40 °C
Permissible air humidity (without condensation)	max. 75% at 35 °C
<b>Operation:</b>	
Permissible ambient temperature	+10 to +40 °C
Permissible air humidity (without condensation)	max. 75% at 35 °C
Atmospheric pressure	800 hPa to 1060 hPa
Hight above sea level	max. 2000 m
Degree of pollution	2
<b>Operating Data</b>	
Protection Class	II
Protection Type	IP 20
Electrical Safety	in accordance with DIN EN 61010-1 (IEC 61010-1)
Pollution Degree	including CSA and UL regulations
Overvoltage Category	II
Radio Interference Suppression	in accordance with EN 61326-1
Line Voltage for Power Supply	100 to 240 V (+/- 10%) wide-range input power supply The supply voltage does not need to be transformed.
Line Frequency	50/60 Hz
Power Consumption	max. 70 VA; secondary voltage of external power supply 12 V
Plug-in Power Unit Output	12 V DC; max. 2.5 A
<b>Light Source – LED</b>	
Type	white light LED, LED risk group 1 according to DIN EN 62471
Color Temperature	5000 K
Homogeneous Field Illumination	20 mm diameter
Suitable for Objective with Magnification	5x - 63x for TL, 5x - 100x for RL
Analogous Brightness Adjustment	5x to 100x approx. 15 to 100%
Life Time	10000 hours

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	Binocular Tube	Binotube with Integrated 3 Megapixel Camera	Binotube with Integrated 5 Megapixel HD Streaming Camera
Viewing Angle	30°	30°	30°
Viewing Height	380 - 415 mm	380 - 415 mm	380 - 415 mm
Interpupillary Distance	Adjustable, 48 - 75 mm	Adjustable, 48 - 75 mm	Adjustable, 48 - 75 mm
Optical Split Ratio		50% / 50%	50% / 50%
Camera Adapter Magnification		0.39x	0.39x
Camera's Field of View, Diagonal		73% of eyepiece FOV (sensor cropped for performance reasons)	91% of eyepiece FOV
Sensor		Micron MT9P031, 1/2.5" (7.13 mm diag.), CMOS, 24 bit color, 2560 x 1920 pixels, 2.2 µm pixel size, spectral sensitivity without IR filter 400 - 700 nm	Micron MT9P031, 1/2.5" (7.13 mm diag.), CMOS, 24 bit color, 2560 x 1920 pixels, 2.2 µm pixel size, spectral sensitivity without IR filter 400 - 700 nm
Live / Video Recording over LAN / WLAN		640 x 480 pixels (VGA) 20 fps, Latency: ~400 ms Bitrate: 1.5 / 3 / 6 Mbit/s	1280 x 720 pixels (HD / 720p) 15 fps, Latency: ~400 ms Bitrate: 4 / 8 / 12 Mbit/s
Live over HDMI			1920 x 1080 pixels (Full HD), 30 fps 1280 x 720 pixels (HD/720p), 60 fps
Snap Resolution		3 MP: 2048 x 1536 pixels, YUV color	5 MP: 2560 x 1920 pixels, YUV color 1 MP: 1280 x 720 pixels, YUV color
Auto White Balance		Yes (Auto/Lock)	Yes (Auto/Lock)
Color Temperature Adjustment			via On-Screen-Display
Electrical Interfaces		12 V DC power input (provided by the microscope via interconnection cable)  Network (RJ45), 100 Mbit/s	12 V DC power input (provided by the microscope via interconnection cable)  Infrared receiver for remote control USB 2.0 (Mini USB) Network (RJ45), 100 Mbit/s HDMI out (1080p30/720p60) SD card slot
Buttons		Reset button (backside)	Snap, AWB push, contrast up/down, brightness up/down, menu

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## iPad Imaging App ZEISS Matscope

Install from the App Store on any iPad\*, free of charge. Take advantage of readout and additional software features by purchasing a network adapter with your Primotech microscope.

### Hardware Requirements/Support

\*iPad generation 2 or later, including iPad mini

Primotech microscope with

- Tube with integrated 3 megapixel or 5 megapixel camera
- Network adapter Basic or Advanced for encoding readout and additional software functionality

Calibration slide for app – for automatic, high accuracy scaling and reflected light shading correction

Wireless connection to the microscope (i.e. using a commercially available WLAN router/access point, or existing WLAN infrastructure)

Note: You can install and try out Matscope before you buy your Primotech through its virtual microscopes.

Basic Functionality	ZEISS Matscope without Network Adapter	ZEISS Matscope with Network Adapter "Basic"	ZEISS Matscope with Network Adapter "Advanced"
Real-time hardware-accelerated live image	●	●	●
High-resolution image snapping with shading correction	●	●	●
Live thumbnails of all microscopes connected to the network	●	●	●
Annotations and measurements, automatic scale bar	●	●	●
Image processing (Mirror/rotate, crop, gamma, brightness, contrast, color intensity, sharpness)	●	●	●
Save images in .dzi or .jpg format with metadata	●	●	●
Focus indicator, touch magnifier, graticule overlays, display curves, overexposure indicator	●	●	●
Video recording	●	●	●
Exchange files with any PC through built-in shared folder support	●	●	●
PDF and RTF report creation and printing	●	●	●
Image and report sharing via email or social media	●	●	●

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Advanced Functionality	ZEISS Matscope without Network Adapter	ZEISS Matscope with Network Adapter "Basic"	ZEISS Matscope with Network Adapter "Advanced"
<b>Image/Live Comparison</b> Side-by-side comparison of live and snapped images, or two snapped images, with synchronized scrolling and zooming	○	●	●
<b>Filename Templates</b> Keep your images in order and find them easily through filename templates, filtering and search function	○	●	●
<b>Magnification Readout</b> Reliable scaling information in every image through wireless encoding readout – the app always knows which objective is selected at the microscope and saves it in the images' metadata	○	●	●
<b>"Walk in and Play"</b> Microscope-side configuration storage: Connect to a configured microscope with any iPad and be productive immediately	○	●	●
<b>EDF</b> Enhanced Depth of Field snapping, to capture multiple focus layers in one image	○	●	●
<b>Additional 2D Measurements</b> Polyline, spline, spline contour, count and parallel distance measurement tools	○	●	●
<b>Application-specific Measurement Features:</b> <ul style="list-style-type: none"> <li>■ PCB/Layer thickness measurements                             <ul style="list-style-type: none"> <li>■ Automatic alignment of the image</li> <li>■ Automatic recognition of straight layers</li> <li>■ Tapping a recognized layer automatically places width/thickness measurements</li> </ul> </li> <li>■ Quick manual measurement via multi-touch placement</li> <li>■ Multiphase measurements                             <ul style="list-style-type: none"> <li>■ Up to 4 phases + remaining phase</li> <li>■ Greyscale threshold-based selection of phases</li> </ul> </li> <li>■ Porosity measurements</li> </ul>	○	○	●
● available    ○ not available			

# Count on Service in the True Sense of the Word

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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](http://www.zeiss.com/microservice)



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[www.zeiss.com/primotech](http://www.zeiss.com/primotech)



We make it visible.