



# Smart-Eye™

## Digital Mini Microscopes

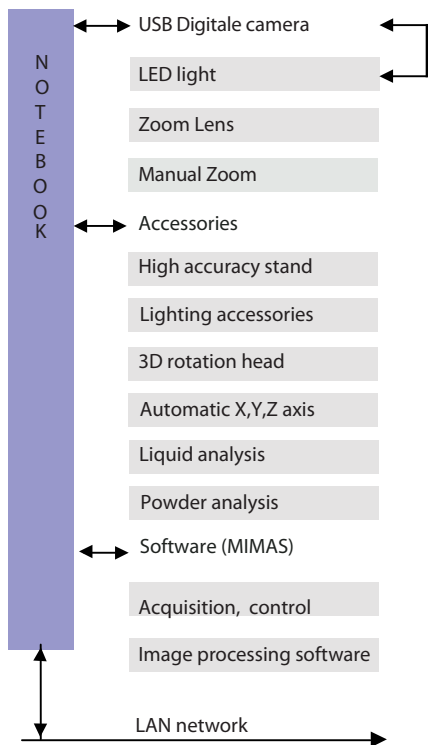


**For professional use**

Smart-eye™ is a machine vision based concept in applied microscopy for the professional user. The system consists of a compact digital mini microscope mounted on a multifunctional high precision stand. The high speed USB interface allows convenient interfacing with a lab top through dedicated control and acquisition software. All of this comes at a most reasonable and affordable price. For research as well as quality inspection the Smart-eye system is very suitable.

## Microscope set-up

A typical configuration of a Smart-eye system is depicted in the following diagram.



The central unit of the system is a mini microscope with build CMOS camera sensor with up to 1.3 MP resolution, a build in LED ring Light, a magnification wheel allowing 10-50X, 200X magnification or 500X fixed and a microtouch function and high speed USB 2.0 interface. The camera and lighting unit is controlled by acquisition and control software installed on the lab top.

## CMOS Sensor

The last decenia, technology has advanced to such an extend that CMOS sensors for use in camera devices have become better in quality.

For many CMOS sensors give equal quality images as compared with the more expensive CCD cameras. The 1260x1024 pixels of the Smart-eye sensor allows acquisition of images with a speed of 30 frames / sec.

## Build in LED light

In the mini-camera 8 LED lights form an illumination ring which can be switched on and off by the software. Instead of white light fluorescence UV diffuser LED lights can be selected.

## Magnification and focus

The mini-camera system has a magnification wheel, which allows to inspect objects from 10~50X, 200x or 500X in fixed mode. The magnification position can be calibrated through the Mimas software.

## Microtouch

The mini-camera has a micro-touch function. This is a manual button to trigger the capture of an image.

## High Speed USB 2.0

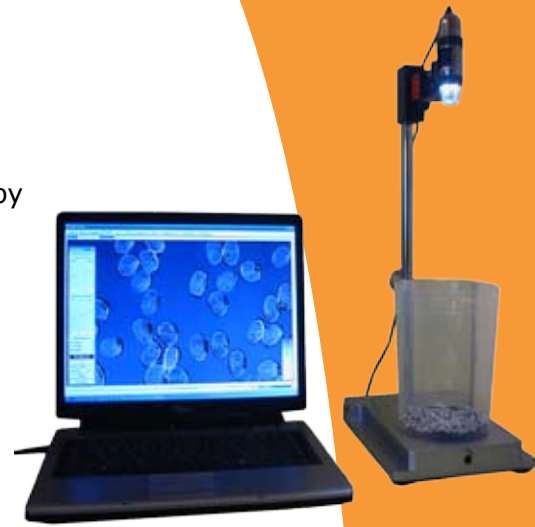
The mini-camera comes with a high speed USB 2.0 interface.

## Software

For the Smart-eye system we provide various software options enabling, real time video display, image data management, image analysis, geometric measurement, real time particle analysis, statistics, with related graphing and many more. Our standard Mimas software package is Windows based.

## Examples of applications

PCB soldering / Plastic parts structure  
Bio specimen / Authentification /  
Jewelry / Mould profile / Micro-welding  
Fine mechanical parts



USB 2.0 Interface

Microtouch button

Magnification wheel

CMOS array

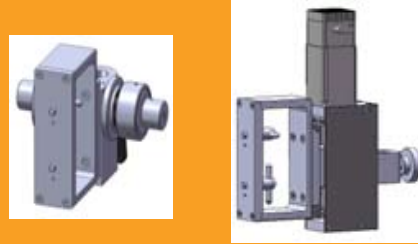
LED Light

## Accessories

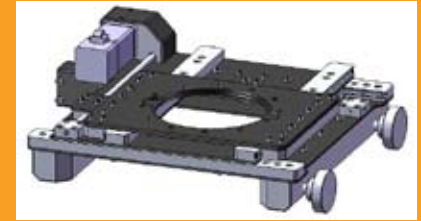
Micro-Optik provides many useful accessories. Most configurations are based around our multi-functional stand which can be used for practically all possible experiments. The stand consists of a massive anodized aluminium base plate where a stainless steel rod is vertically positioned. On the rod a positioning unit is placed to firmly hold the camera. The base block which allows a sample to be inspected either from the top or with back light. The cylindrical basin in the base plate allows a mirror to be positioned such as to focus light arising from a multifiber cord of which end is positioned through the connector on the base plate. The Mini-camera is mounted on the stand through various possible positioning units.



The positioning units vary from a standard manual, a manual high precision to a automatic stepper motor controlled.

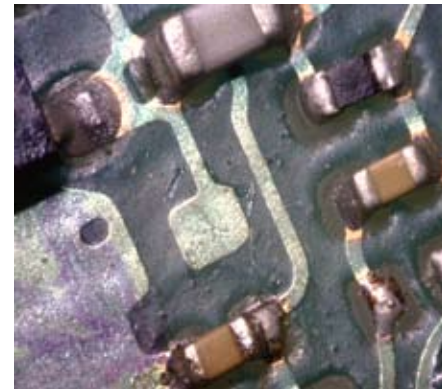


We also provide X,Y positioning stands, which can be used to inspect large objects at various positions in a plane



The X,Y stand comes in manual as well as in stepper motor computer controlled. We provide for any application a tailored motorized stage.

For liquid studies we provide tailored cells allowing the inspection of particles on-line when a liquid flows through.

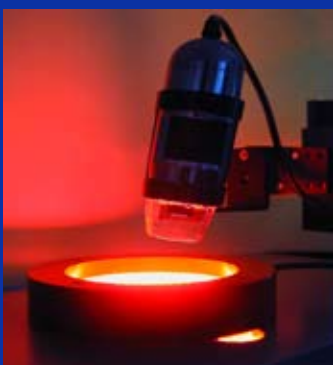


## 3D inspection

For the Smart-eye we provide a rotary head to inspect objects through 360° in one plane. This kind of analysis is especial convenient for complex samples like PCB boards, small devices in the automotive industry. When removing the rotation

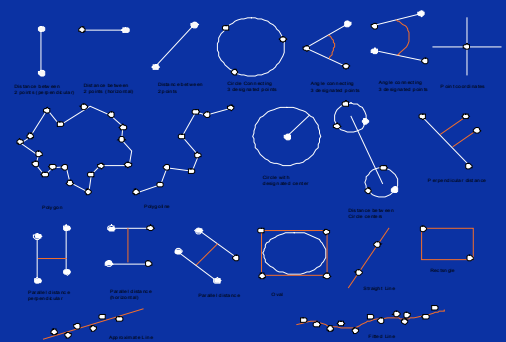
## Illumination

We provide various illumination solutions for various demanding sample analysis



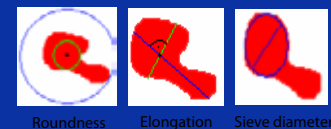
## Geometrical measurement

The MIMAS software was developed with the daily time pressure of the quality inspector in mind. User friendliness is the key word for the 2 dimensional measurement package which results in faster quality reporting. The results can easily be imported in quality inspection reports. 2D parameters which can be calculated are shown in the diagram

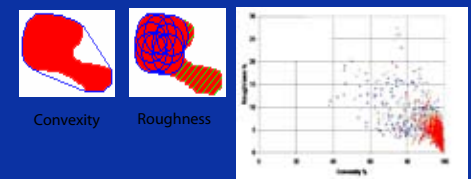


## Morphometric parameters

For particle analysis the morphometric parameters are very convenient. The software offers a sophisticated methodology to characterize the different particles in accordance to their morphometry.



Roundness Elongation Sieve diameter

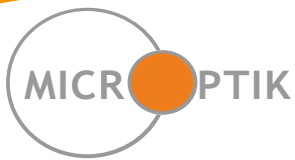


Convexity Roughness

## Topography

For quality inspection of various devices we provide special topography visualisation routines.





# Smart-Eye™ order sheet

## Mini Microscope Quality Inspection System

- ✓ 1.3 MP (1280x1024 pixels) CMOS camera
- ✓ Build in LED light (LED on/off controlled by software)
- ✓ Magnification & focus wheel, 10-50x, 200x
- ✓ Long working distance max 90X magnification
- ✓ Microtouch function
- ✓ High Speed USB 2.0 Interface

## Stand

- ✓ Standard manual adjustable stand
- ✓ High accuracy manual adjustable stand
- ✓ Motorized Z adjustable stand
- ✓ Back lighting accessories
- ✓ Manual XY table
- ✓ Motorized XY table

## External Light source

- ✓ Metal halide light source
- ✓ Multifiber cable
- ✓ LED Back Light illumination plate
- ✓ LED Circular light

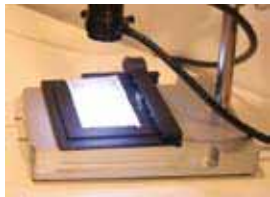
## 3D rotation head

- ✓ 360 degrees rotation head with mirrors and
- ✓ LED illumination, including power supply and control

## MIMAS software

- ✓ Mimas data acquisition and control
- ✓ for video analysis, data management
- ✓ for machine vision applications
- ✓ for calibration, geometrical calculations 2D, 3D,
- ✓ topography analysis, filtering, kinetics, FFT, 3D DFD
- ✓ pattern recognition. particle analysis, statistical evaluation routines,

For more information and prices: [www.micro-optik.com](http://www.micro-optik.com)



**MicrOptik**

Business Unit of Flokal B.V.

Dorpenweg 27, 5371 KS Deursen, The Netherlands  
Tel. +31 (0) 486 463 688 Fax. +31 (0) 486 414 514  
[www.micro-optik.com](http://www.micro-optik.com) e-mail [info@micro-optik.com](mailto:info@micro-optik.com)