KITOTEC®

lupenshOp.de
Die Profis fürs Detail

Looking for a high-end video microscope for your production, development and quality control?
We can offer you the compact KITOZOOM with measuring software, positioning- or measuring tables.





What makes a good video microscope?

What criteria should we use to look for one? It must meet the points listed here: Excellent pictures - simple to operate – depth of focus - large zoom range - good lighting - efficient measuring software – XY measurement table suitable for the task of measuring – and: Really good value for money!



The three models in the **KITOZOOM** offer precisely these qualities.



To minimize the difficulty of choosing, we first inform you of the technical characteristics and operation of the optical system. The following pages describe the three standard models plus the possible options.
Information on the **Metric** measuring software can be found at Page 7.



The demands on the optical system, lighting, stand and XY measurement table are a result of the inspection- or measuring job. We must take care here to use a magnification which is geared to the required measuring accuracy.

If the following information is insufficient for you to choose the system or find the correct components, please call us. We will be glad to help you put the correct model together.

KITOTEC®

KITOZOOM: Optical system and USB camera:



A zoom system consists of the following components: Zoom unit with 6.5x optical magnification, adapter, accessory lens and C-mount adapter. This is in addition to the appropriate USB camera. To be able to work accurately with the **Metric** measuring software, we need to be in a position to be able to adjust the individual zoom levels in a reproducible way. For this reason the zoom unit has six spherical recesses which a spring-loaded ball can engage when rotated. The levels, marked by numbers, are created as "lenses" in the **Metric** software and calibrated and saved using a reticle plate with certificate.

One of the great advantages of the zoom system is that within the zoom range the working distance (end of lens to test subject) does not need to be changed. The distance is adjusted at the highest magnification level and then remains in force for the entire zoom range. The **KITOZOOM**'s scope of delivery includes an 0.5x accessory lens. This way we obtain two zoom ranges, which will be entirely sufficient in 95% of all cases. Four additional accessory lenses (0.25x, 0.75x, 1.5x and 2.0x) are available for larger visual fields or higher magnifications.



The USB 2.0 camera used (two megapixels) with a 1/3" CMOS chip used offers a resolution of 1600 x 1200 pixels. As an option USB cameras can be supplied with a higher resolution and with CCD chips. However we do not often recommend this since hardly anybody uses the corresponding PC hardware to display pictures of 2048 x 1600 pixels or more on the PC monitor. Also the image transfer rate is lower. Below are the visual fields, magnifications and working distances (the magnification relates to a 24" monitor):

With 0.5x accessory lens:

Visual field:	27 mm – 4 mm
Working distance:	170 mm
Magnification:	15x to 105x

With 0.75x accessory lens:

Visual field:	18 mm – 2 mm
Working distance:	116 mm
Magnification:	25x to 160x

With 1.5x accessory lens:

Visual field:	9 mm – 1.54 mm
Working distance:	47 mm
Magnification:	50x to 330x

With 0.25x accessory lens:

Visual field:	56 mm – 8 mm
Working distance:	310 mm
Magnification:	8x to 54x

Without accessory lens:

Visual field:	13 mm – 2 mm
Working distance:	85 mm
Magnification:	30x to 215x

With 2.0x accessory lens:

Visual field:	5 mm – 1 mm
Working distance:	27 mm
Magnification:	80x to 450x

KITO 10

The **KITO 10** model consists of the **KITOZOOM** zoom unit with USB camera, an LED ring light with dimmer (see Page 5), height adjustment using a rack and pinion system which offers quick- and fine adjustment, and the base plate. This 400 x 250 mm large plate is manufactured from 20 mm precision-milled and anodized aluminum. The base plate mounting feet can be individually adjusted in height and fixed.
Weight: 10 kg, dimensions: 400 x 250 x 550 – 670 mm.





KITO 10 scope of delivery:

KITOZOOM video microscope series
- **Order no. KITO 10**
- **KITOZOOM** - grid zoom at six levels
- LED ring light with power pack, dimmable
- includes 0.5x accessory lens
- base plate with 400 x 250 mm
- two zoom ranges - twelve zoom levels
- USB 2.0 camera 1600 x 1200 pixels
- 0.1 graduation calibration disk and DAkkS test report
-**Metric PE** or **Metric MT** measuring software

www.lupenshop.de

KITO 30

The **KITO 30** model is a configuration with a 50 x 50 mm XY measurement table, with two digital measuring spindles (Mitutoyo Digimatic) and two data cables and an interface (Steinwald) for transmission of X and Y coordinates to the **Metric MT** measuring software. Why do we need an interface? Imagine you have to measure a test subject with a tolerance of ± 5 µm, but the diameter of the test subject is 30 mm. If we now use a low magnification in order to completely reproduce the part to be measured, we get however a pixel resolution at 30 mm of approximately 17 µm. In so doing the specified measuring accuracy can no longer be adhered to. Therefore we use a suitably high magnification with a low pixel resolution and using the XY measurement table process can transmit the coordinates to the measuring software and there measure with appropriate accuracy.



Of course we can supply the system without interface and data cable if these are not needed. Delivery with the **Metric PE** is also possible. The cross table can also be supplied for 12 mm diameter instead of 18 mm receptacles. Please note that this configuration has a precision of ± 5 µm via the 50 x 50 mm. Alternatively an XY measurement table with SCD system can be used which offers a precision of ± 2 µm.
Weight: 12 kg, dimensions: 580 x 400 x 550 – 670 mm.



KITO 30 scope of delivery:

KITOZOOM video microscope series
- **Order no. KITO 30**
- **KITOZOOM** - grid zoom at six levels
- LED ring- and bottom light with power pack, dimmable
- includes 0.5x accessory lens
- base plate with 50 x 50 mm XY measurement table
- includes two Mituyo Digimatic dial gages, data cables and interface
- two zoom ranges - twelve zoom levels
- USB 2.0 camera 1600 x 1200 pixels
- 0.1 graduation calibration disk and DAkkS test report
- **Metric MT measuring software**

KITO 40

The **KITO 40** model is a complete configuration with a separate height-adjustable positioning table. The adjustment range is 80 x 60 mm. The fine adjustment for height is made via the cross table unit. The **KITO 40** is the ideal solution for the quick and easy positioning of small parts. As an option we offer a rotation table for the **KITO 40** which can simply be placed into the cross table opening. The glass insert plate of the cross table is then used for the rotation table. We would however like to point out that for very fine positioning jobs in the 0.01 mm range it makes more sense to use a **KITO 10-** model with an appropriate precision cross slide table. (see Page 5: EK-100 and EK-150 models).
Weight: 13 kg, dimensions: 400 x 250 x 550 – 670 mm.



KITO 40 scope of delivery:

KITOZOOM video microscope series
- **Order no. KITO 40**
- **KITOZOOM** - grid zoom at six levels
- LED ring- and bottom light with power pack, dimmable
- includes 0.5x accessory lens
- 80 x 60 mm height-adjustable cross table
- base plate 400 x 250 mm
- two zoom ranges - twelve zoom levels
- USB 2.0 camera 1600 x 1200 pixels
- 0.1 graduation calibration disk and DAkkS test report
- **Metric PE** or **Metric MT** measuring software

KITOTEC®

Illumination units for **KITOZOOM**

LED-R





The scope of delivery of the systems described on the previous pages includes the LED-R ring light. For many applications LED-ring lights are sufficient for top lighting. The LED-R with its 98 white LEDs, arranged at an angle of 15° in three rows, offers perfect illumination quality. The outer diameter is 67 mm and the opening inside 35 mm. The LED ring light is mounted with three screws on an adapter, which is screwed on to the zoom.
Scope of delivery includes a power pack with infinitely variable dimming.

LED ring light for KITOZOOM series
- **Order no. LED-R**

LED-U



In the **KITO 30** and **KITO 40** models an LED bottom light plate is included in the system price. The LED bottom light is directly incorporated in the two cross tables.
The round illumination area has a diameter of 70 mm and the outer diameter is 95 mm.

LED bottom light for KITOZOOM series
- **Order no. LED-U**

Cross tables for **KITO 10**

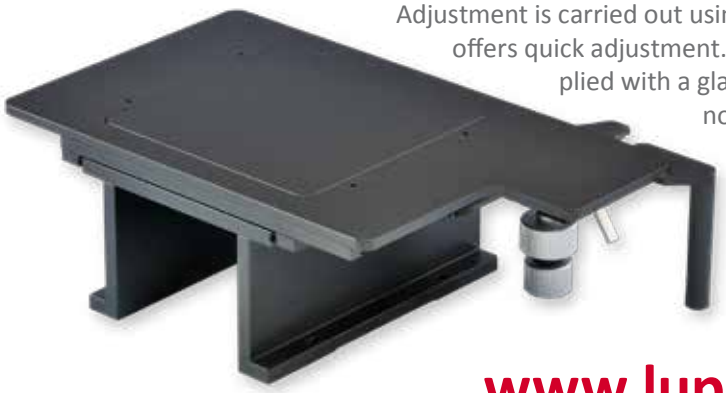
EK-100

Precision cross slide table 100 x 100 mm, fitted with high-precision cross roller bearings. Adjustment is carried out using the side knurled screws in X and Y. The device is installed using L-support bars. The EK-100 is supplied with a glass or metal insert plate depending on requirements. Please note: When using this model a height adjustment of about 80 mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm.

Cross table for KITO 10
- **Order no. EK-100**



EK-150

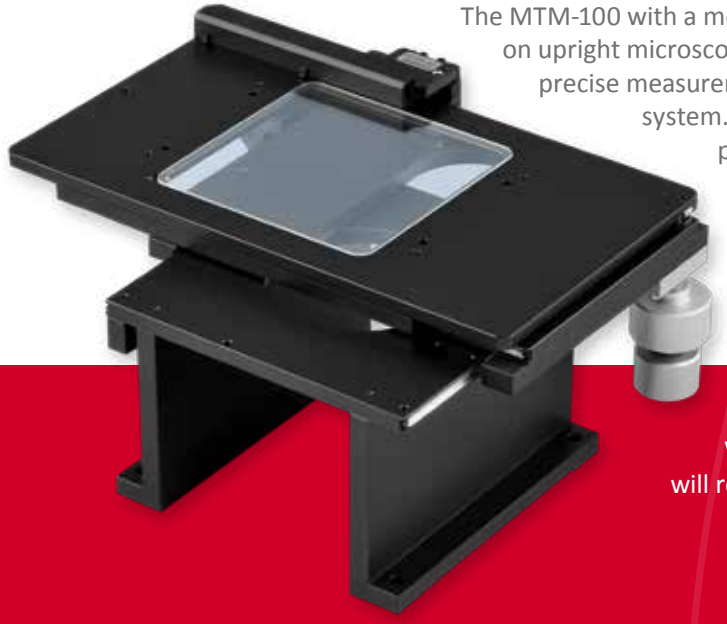


Precision cross slide table 150 x 150 mm, fitted with high-precision cross roller bearings. Adjustment is carried out using the side knurled screws in X and Y. In addition the EK-150 offers quick adjustment. Mounting is by means of L support bars. The EK-150 is supplied with a glass or metal insert plate depending on requirements. Please note: When using this model a height adjustment of about 80 mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm.

Cross table for KITO 10
- Order no. EK-150

www.lupenshop.de

MTM-100



The MTM-100 with a measuring range of 100 x 100 mm. Especially designed for use on upright microscopes, these measuring tables have a 3-plate structure. Highly precise measurements are guaranteed through the use of the MR measuring system. Position definition in two measuring axes is via the SCD display device. Data from the **Metric**measuring software is read off via the USB cable connection and the XY coordinates offset in the measuring software. Depending on application the measuring table is supplied with a glass or metal insert plate (please specify when ordering).

Please note:
When using this model a height adjustment of about 60 mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm.

XY measurement table for KITO 10
- Order no. MTM-100

MTM-150

The MTM-150 with a measuring range of 150 x 150 mm. Apart from the measuring range the technical data is identical to the MTM-100. Depending on use, the measuring table is supplied with a glass or metal insert plate (please specify when ordering). When using this model a height adjustment of about 60 mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm.

XY measurement table for KITO 10
- Order no. MTM-150



Special solutions? Questions are welcome!

The MT series is available upon request with 200 x 200 mm and 300 x 300 mm , and as a special model with 600 x 600 mm, measuring ranges. From 200 x 100 mm, these measuring tables are available with motorization and control. Should you find yourself unable to accomplish your measuring job with the components referred to here, ask us about special-purpose solutions. A multitude of special stands, XY measurement tables, manual or motorized, and zoom systems with coaxial light reflection and motorized adjustment gives a huge number of approaches to solving the problem. Also available are gauges for Z-measurements or motorized Z-axes with measuring systems.
Contact us.







KITOTEC®

Metric: The measuring software



Easy to use!

Measuring software shouldn't cost the user time. The Metric measuring software is an alternative to other available programs which are often complicated to use.

Why Metric?

The benefit of Metric being able to measure in the live image saves an enormous amount of time, given that images need not be saved first and subsequently retrieved again. Through the use of our USB 2.0 camera, the software can be installed on as many computers as desired. Metric is enabled wherever the camera is connected. This saves the inconvenience of USB dongles.

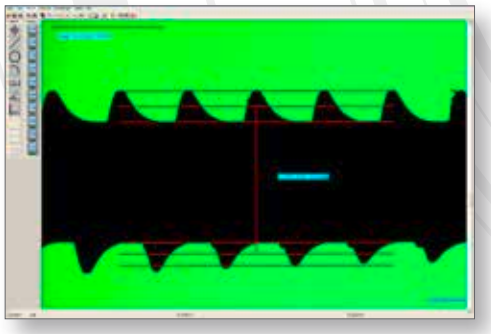
Metric can be switched between thirty-five different languages, a feature which has led to the program being used all over the world. This is not only of interest to international clients. In large companies with staff from many different nations, software training is made much easier.



Updates for Metric measuring software are generally free of charge. Using the appropriate serial number, the user is immediately taken to the correct version in our download area. This saves time-consuming update contracts and ensures that users can always keep their systems up to date.

It is always possible to carry out an upgrade from a Metric PE to a Metric MT at the original update price. Your old version will not lose its value. Of course, we must not forget telephone support: Our telephone number is contained in the Metric header bar.

Versions: There are two versions of the Metric measuring software. Metric PE contains basic measuring functions, such as distance, radius and circular measurements, angle measurements and some other basic measuring functions. For users who prefer to assign functions to hot keys, Metric PE has the option of creating hot keys.



Metric Plus contains all measuring functions in addition to the special functions for tools: Special circular measurements, measuring functions for the PCB area, thickness measurements, DFX overlay, focus calculation module and many others. All measuring functions can also be used with the automatic edge selection. It would take too long to list all of the functions. Therefore these are all laid out in the function list.

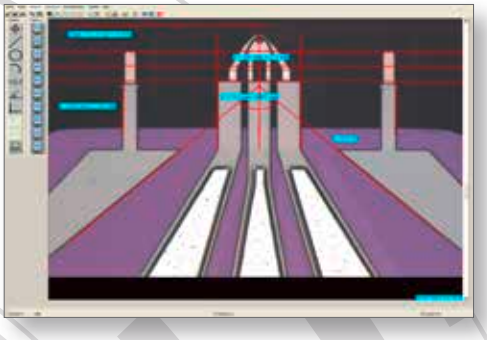
Metric MT has two additional functional levels: The buttons located in the left column activate the measurements point, line, circle and circle segment. The three buttons below them are designed for the distance, angle and best-fit line. Using the four upper measuring functions, all relevant objects or measuring points are first marked. After that the measurements can be linked up as required in the calculator window.



The second function level includes the readout of X, Y and Z values. Metric MT can basically be combined with practically every measuring system. Regardless of whether the measuring tables are from Märzhäuser, Uhl, Prior, Steinmeyer or others, the XY axis are read and calculated in Metric MT. If no direct USB or RS-232 connection is possible, it may be necessary to transfer data via a suitable interface. Data from measuring spindles such as Mitutoyo, Sylvac, Heidenhain or integrated measuring systems, for instance from Schneeberger, on or in guidance systems is also processed. The X, Y and Z values are permanently displayed in an additional window in Metric. On our website is a list of the measuring systems which can currently be read. If you have a system which is not included in the list, please do not hesitate to ask us.

Metric MT also has many special measurement functions for tool measurements (drills, milling cutters, screw taps and indexable inserts). New image processing functions for diameter, radii, distances and angles offer even quicker and repeatable measurements.

www.lupenshop.de



With a good contrast, the user only needs to pull up one box with the mouse and the result is displayed automatically. All Metric measuring functions can also be used with the automatic edge selection.

The scope of Metric Plus and Metric MT is practically unbeatable in terms of price. And if a specific measuring function which you require for your company is not included in Metric: we will be happy to program a special measuring function for you.

KIMAG: The measuring magnifier with built-in LED lighting, focusable and 0.1mm measuring scale



Our new LED precision illuminated measuring magnifier with achromatic (chromatic aberration corrected) coated optic system consisting of four elements and two component assemblies. The measurement scale is made of glass and has a 0.1 mm graduation with a measuring length of 30 mm. The housing contains a ring consisting of eight LEDs, which provides for a bright and high-contrast illumination of the measuring field. The conflict between high resolving power and wide field of view was able to be fully resolved in this product, giving efficient, precise control. For higher transmission the lenses are coated with anti-reflection coating.



Outstanding display quality via an achromatic clear glass optical system which is chromatic aberration corrected and free from distortion right up to the boundary area and the comprehensive annular light from the recently developed eight LEDs set new benchmarks in this price range. Delivery includes batteries.



Order no.	**KIMAG 10**
Magnification:	10 times
Focusable:	Yes
Measuring length:	30 mm
Visual field:	34 mm
Scale graduation:	0.1 mm
Optical system:	Achromatic, distortion-free
Dimensions:	46 x 44 mm
Weight:	74 grams
Accessories:	Standard scale and leather case included in scope of delivery.

KITOTEC®

Kitotec GmbH
Carl-Zeiss-Str. 11
D-53340 Meckenheim

Tel.: +49 (0) 2225-7095720
Fax: +49 (0) 2225-7095721
E-Mail: info@kitotec.biz