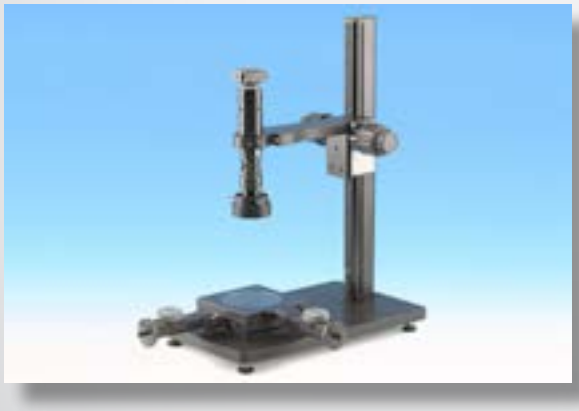
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# KITOTEC

# KITOZOOM

## Video microscopes







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**What makes a good video microscope?**
What criteria should we use to look for one? There are the points listed here that it must meet: Excellent pictures - simple to operate – depth of focus - large zoom area - good lighting - efficient measurement software – XY measurement table suitable for the task of measuring – and: Really good value for money!

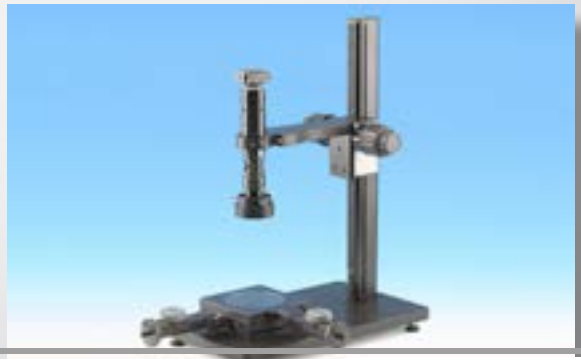
The four models in the **KITOZOOM** series offer just these qualities. To minimise the difficulty of choosing we first inform you of the technical characteristics and operation of the optical system. On the following pages the four standard models plus the possible options are described. You can find information on the **KITEC** measurement software on pages 17 and 18.





The demands on the optical system, lighting, stand and XY measurement table are a result of the test- 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 the correct components, please call us. We will be glad to help you put the correct model together.



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# KITOZOOM: Optical system and USB camera:



A zoom system consists of the following components: zoom unit with optical magnification 6.5x, adapter, accessory lens and C-mount adapter. This is in addition to the right USB camera. To work accurately with the **KITEC** measurement software we need 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 **KITEC** 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 accessory 0.5x accessory lens. This way we get two zoom ranges, which will be entirely sufficient in 95% of all cases. Two accessory 1.5x and 2.0x lenses are available for 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. Lens coverages, magnifications and working distances are as follows:

**With 0.5x accessory lens:**

| | |
|---|---|
| Lens coverage: | 27 mm – 4 mm |
| Working distance: | 170 mm |
| Magnification factor: | 15 times to 105 times (on 24" monitor) |

**Without accessory lens:**

| | |
|---|---|
| Lens coverage: | 13 mm – 2 mm |
| Working distance: | 85 mm |
| Magnification factor: | 30 times to 215 times (on 24" monitor) |

# KITO 10



The **KITO 10** model consists of the **KITOZOOM** zoom unit with USB camera, an LED ring light with dimmer (see page 9), height adjustment using a rack and pinion system which offers quick- and fine adjustment, and the base plate. This 400 x 250 mm size plate is manufactured from 20 mm precision-milled and anodised aluminium. The base plate mounting feet can be individually adjusted in height and fixed. The plate has six additional prepunched holes. Special holding fixtures are often manufactured to quickly and easily position test subjects. These holding fixtures can then be mount on the base plate using one of the prepunched holes provided. In addition, the prepunched holes on the base plate are provided for a series of optional cross positioning and cross measuring tables (page 12). Weight: 10 kg. Dimensions: 400 x 250 x 550 – 670 mm.



Scope of delivery and price for the **KITO 10** below:

**KITOZOOM video microscope series**
- **Order No. KITO 10 - ECO**
- **KITOZOOM** - grid zoom at six levels
- LED ring light with power pack, dimmable
- includes 0.5x accessory lens
- base plate with six prepunched holes
- two zoom ranges - twelve zoom levels
- USB 2.0 camera 1600 x 1200 pixels
- calibration disk 0.1 graduation and test report
- **KITEC ECO** measurement software

alternatively with the extended version of **KITEC PRO** measurement software

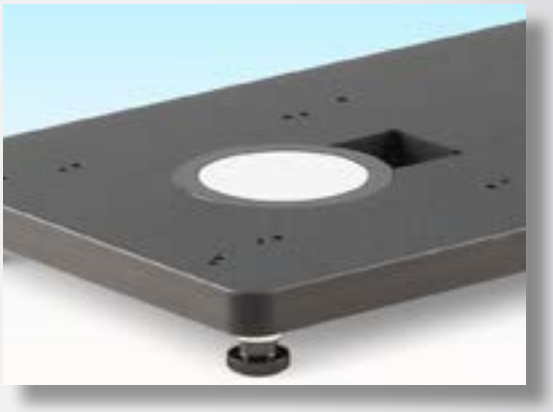
- **Order no. KITO 10 - PRO**

# KITO 20



The **KITO 20** model is distinguished by a different base plate in which a flat LED light plate is incorporated. So that the light plate does not jut out when cross tables are being used, the LED light plate is inlaid in the cut-out. The light plate cable is screwed on to the underside with cable clips and is run on the left next to the height adjuster upwards.

The illuminated area has a diameter of 70 mm. The cut-out is longer in the direction of the rack system, as a parallel bottom light can be used in these base plates as an alternative to the diffuse bottom light (see page 11). Because of the cut-out, only five different prepunched holes for cross tables are available on this light plate (see page 13). Weight: 10 kg Dimensions: 400 x 250 x 550 – 670 mm.



Scope of delivery and price for the **KITO 20** below:

**KITOZOOM video microscope series**
- **Order no. KITO 20 - ECO**
- **KITOZOOM** - grid zoom at six levels
- LED ring light with power pack, dimmable
- LED bottom light with power pack
- includes 0.5x accessory lens
- base plate with five prepunched holes
- two zoom ranges - twelve zoom levels
- USB 2.0 camera 1600 x 1200 pixels
- calibration disk 0.1 graduation and test report
- **KITEC ECO** measurement software

alternatively with the extended version of **KITEC PRO** measurement software

- **Order no. KITO 20 - PRO**

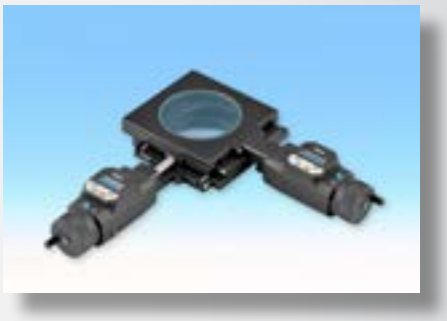
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# KITO 30



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 (Bobe S-BOX 25 MUX / USB) for transmission of X and Y coordinates to the **KITEC MAX** measurement 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 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 is also possible with the **KITEC ECO** or **PRO** version. The cross table can also be supplied for 12 mm diameter instead of 18 mm holding fixtures. 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.

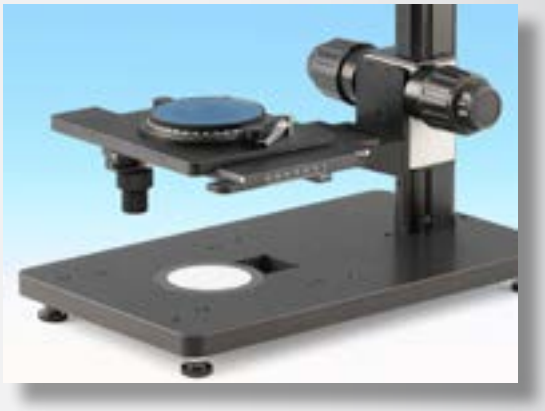
Scope of delivery and price for the **KITO 30** below:

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

# KITO 40



The **KITO 40** model is a ready-to-use configuration with a separate height-adjustable positioning table. The adjustment range is 80 x 60 mm. Fine adjustment for height is made via the cross table unit. For easy, quick positioning of small parts the **KITO 40** is an ideal solution. 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 20** model with an appropriate precision cross table (page 14: EK-100 and EK-150 models). Weight: 13 kg, dimensions: 400 x 250 x 550 – 670 mm.



Scope of delivery and price for the **KITO 40** below:

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

alternatively with the extended version of **KITEC PRO** measurement software

- **Order no. KITO 40 - PRO**

- **Order no. ROT-40 (rotation table for KITO 40)**

# Illumination units for KITOZOOM

## LED-R



The scope of delivery of the systems described on the previous four pages includes the LED-R ring light. For many applications LED ring lights suffice for the 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. In the event of an order as spare part or for other microscopes, price and order number are as follows:

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

## LED-U



In the **KITO 20**, **KITO 30** and **KITO 40** models an LED bottom light plate is included in the system price. This diffuse LED bottom light is an ideal solution for all applications where a parallel bottom light is not required for precise measurement. The round illumination area has a diameter of 70 mm and the external diameter is 95 mm.

In the event of an order as spare part or for other microscopes, price and order number are as follows:

**LED bottom light for KITO 20, KITO 30 and KITO 40 series**
- **Order no. LED-U**

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# Illumination units for KITOZOOM

## LED-SG



For more strongly reflecting materials it makes sense to work with an LED ring light on which a diffuser is mounted on the LEDs. The LED-SG has such an additional diffuser and in addition can be switched to full illumination on the back in four segments. It is infinitely variable for brightness.



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

## KLQ-LED-9



For highly reflective materials or if considerably more light output is needed, the KLQ-LED cold light source with 900 lumens is the perfect solution. With our high performance LED cold light source, we generate light similar to daylight and luminous flux values of 900 lumens at the output of a flexible light guide with an active diameter of nine millimetres. Brightness control is possible with an incremental encoder or electronically with an integrated USB, CAN or RS232 interface. The three filter slide positions allow quick change-over between white light from the light source and up to two colour or conversion filters. Various filters, light guides, focussing lenses, holders and a foot switch are available as accessories. In addition the cold light source can be programmed in the KITEC software and the settings saved to the individual lenses. A ring light is required for the LED cold light source.

**LED cold light source for KITOZOOM**
**- Order no. KLQ-LED-9**

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# SRL 10-2

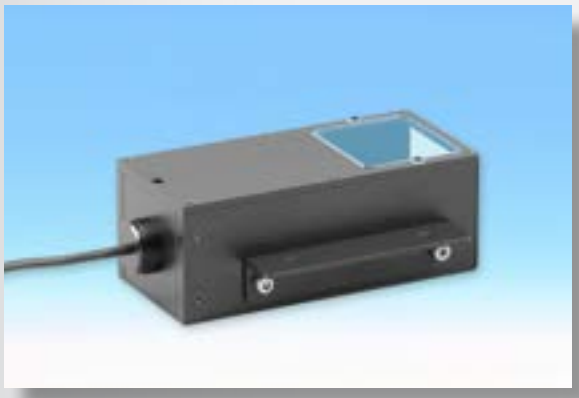


So that we now get the light from the LED cold light source on to the object, we need a ring light. When a very even and diffuse illumination is to be achieved, ring lights are unbeatable. The version with a radiation angle of 10° is used for larger working distances. The internal diameter is 30 mm. Supplied with a diffuser for reducing reflections. The ring light can also be use with or without accessory lens for both working distances.

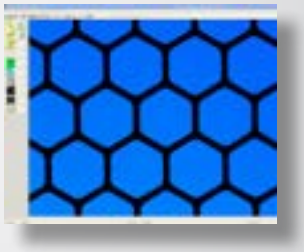


**Ring light with diffuser for KITOZOOM**
- **Order no. SRL 10-2**

# PPL-B



When measuring the diameter of rotationally symmetrical parts or the pitch on threads and taps, normal diffuse light can no longer be used because the light "crawls" around the edges, thereby showing the diameter as less than it really is. Parallel bottom light can be used for such applications, because it guarantees that the light comes straight from below, making precise measurement possible. The light from the blue LED (blue = least diffraction) is guided though an optical systems by a semi-translucent mirror and passes through a Fresnel lens which radiates the light upward in parallel. The cut-out for the bottom light is already included in the base plates of the **KITO 20**, **KITO 30** and **KITO 40**.



**Parallel bottom light, adjustable for KITO 20, KITO 30 and KITO 40**
- **Order no. PPL-B**

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# XY tables for KITO 10

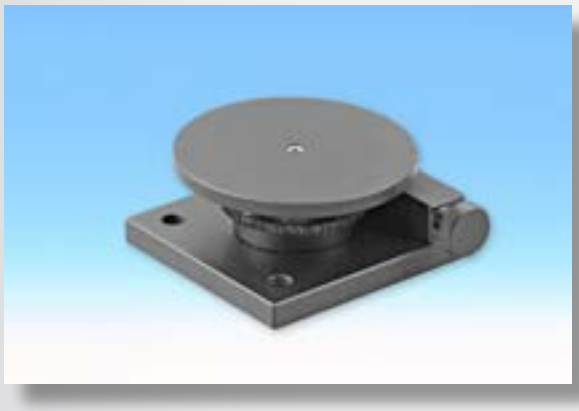
## MT-25



The MT-25 is a compact cross table and fine positioning table with a travel distance of 25x25 mm. The two mechanical measuring spindles with 0.01 mm resolution allow very precise positioning. The placement surface of 85 x 85mm contains at intervals of 60mm four internal thread M4s for the attachment of additional devices. The MT-25 can be combined with the RT-85 rotation table. Can be used only for **KITO 10** model and on KT-100 cross table.

**Cross table for KITO 10**
- **Order no. MT-25**

## RT-85



The RT-85 rotation table has in the centre of the supporting plate a drill bushing with three mm inner diameter for the fitting of other mounting devices. The mounting plate has a diameter of 85 mm. The RT-85 can be combined with the MT-25 positioning and XY measurement table. Can be used only for **KITO 10** model and on KT-100 cross table.

**Rotation table for KITO 10**
- **Order no. RT-85**

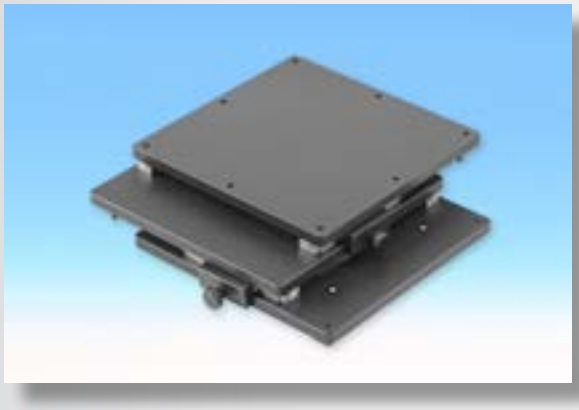


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# KT-100



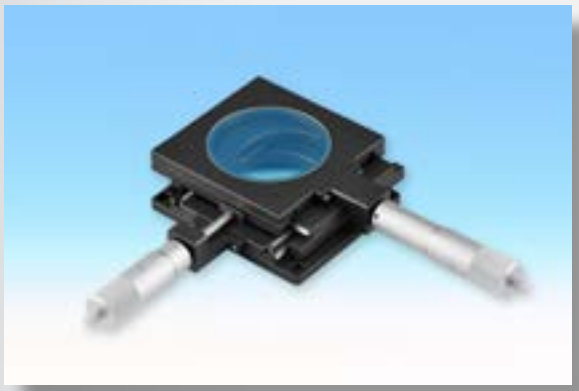
100 x 100 mm cross slide table with closed plate for reflected light applications. Designed for manual adjustment (without fine adjustment). The MT-25 and RT085 components can be mounted on the cross slide table as needed. Position is fixed using both knurled screws on the sides.



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

# XY tables for KITO 10 and KITO 20

# MTU-50-MS



MTU-50-MS positioning- or XY measurement table with 50 x 50 mm measurement area. Scope of delivery includes a metal insert plate. The cross table has 12 mm inserts for the mechanical measuring spindles with 0.01 mm pitch included. Alternatively spindles without measuring equipment with 0.5 and 1 mm pitch can be supplied. A mounting frame for screwing on to the base plate of the **KITO 10** is included in the price. With glass insert plate this cross table can be used on the **KITO 20** model. Please always specify when ordering.

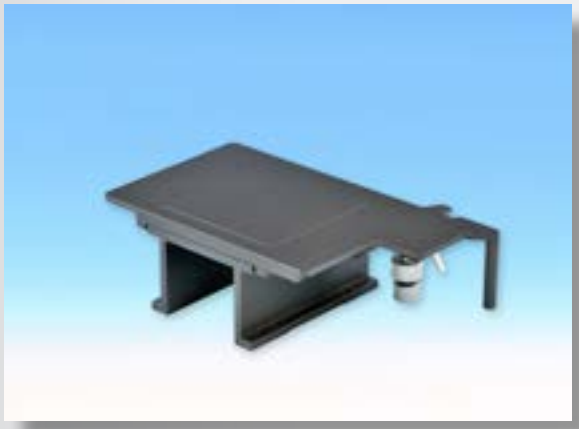
**Cross table for KITO 10 and KITO 20**
**- Order no. MTU-50-MS**

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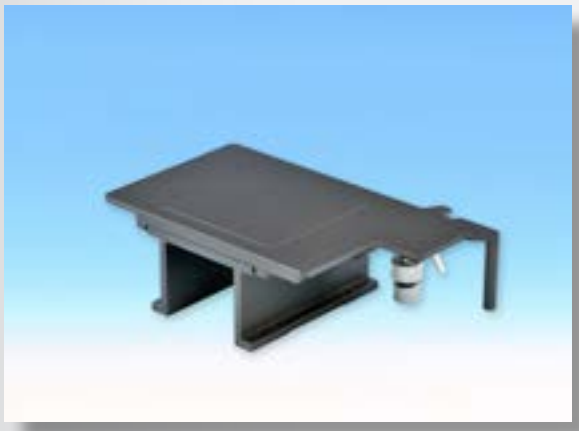
# EK-100



100x100 mm precision cross slide table, 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 80mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm. With glass insert plate this cross table can be used on the **KITO 20** model.

**Cross table for KITO 10 and KITO 20**
- **Order no. EK-100**

# EK-150

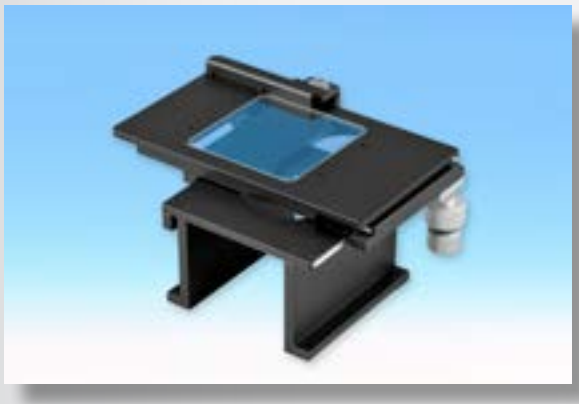


150x150 mm precision cross slide table, fitted with high-precision cross roller bearings. Adjustment is via the side knurled screws in X and Y. In addition the EK-150 offers quick adjustment. Mounting is by means of L support bars. The EK-150 is supplied with a glass or metal insert plate depending on requirements. Please note: When using this model a height adjustment of about 80mm will remain in connection with the 0.5x accessory lens, caused by the large working distance of 170 mm. With glass insert plate this cross table can be used on the **KITO 20** model.

**Cross table for KITO 10 and KITO 20**
- **Order no. EK-150**

# XY measurement tables for KITO 20

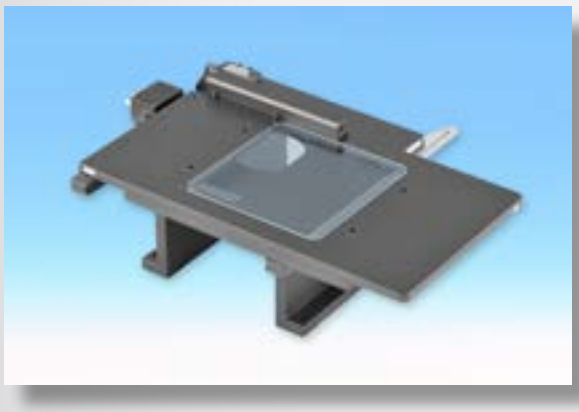
## MTM-100



The MTM-100 with a measuring area 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 KITEC MAX measurement software is read off via the USB cable connection and the XY coordinates offset in the measurement software. Depending on application the measurement 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 and KITO 20**
- **Order no. MTM-100**

## MTM-150



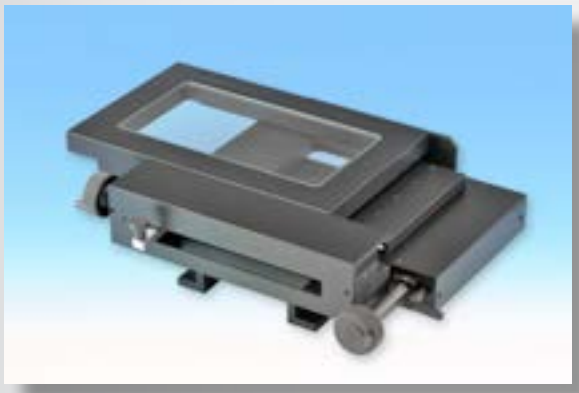
The MTM-150 with a measuring area of 150 x 150 mm. Apart from the measuring area the technical data is identical to the MTM-100. Depending on use, the measurement table is supplied with a glass or metal insert plate (please specify when ordering). When using this model a height adjustment of about 60 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 and KITO 20**
- **Order no. MTM-150**

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# MT-200-100

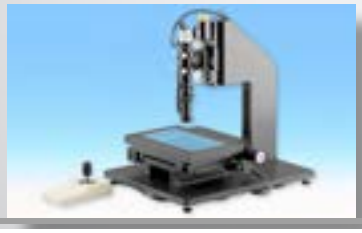


The MTM-200-100 with a measuring area of 200 x 100 mm. Equipped with quick adjustment in X and Y, in addition to the possibility of one-hand operation and an adjustable torque. Highly precise measurements are guaranteed through the use of the MR measuring system. Position definition in two measuring axes is via the SCD display device. This can also be read out using the **KITEC MAX** measurement software via the connection with the USB cable, thus enabling the offset of the XY coordinates. Depending on use (reflected or transmitted light), the measurement table is supplied with a glass or metal insert plate. 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 and KITO 20**
- **Order no. MT-200-100**

## Special solutions? Questions are welcome!

The MTM series is also available with 200 x 200 mm and 600 x 600 mm measuring areas. From 200 x 100 mm, these measuring tables are available with motorisation and control. Should you find yourself unable to accomplish your measuring job with the components referred to here, ask us about a special-purpose solution. A multitude of special stands, XY measurement tables, manual or motorised zoom systems with coaxial light reflection and motorised adjustment gives a huge number of approaches to solving the problem. Also available are gauges for Z-measurements or motorised Z-axes with measuring systems. Talk to us.







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# KITEC: The measurement software

**Easy to use!**
Measurement software shouldn't result in the user losing time. **KITEC** measurement software is an alternative to other available programs, which are often too complicated to use.

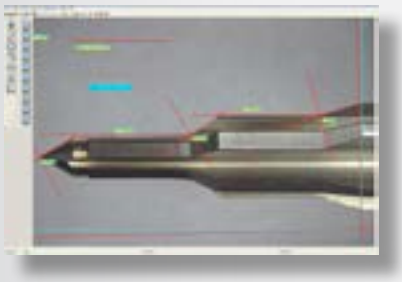



**Why KITEC?**

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

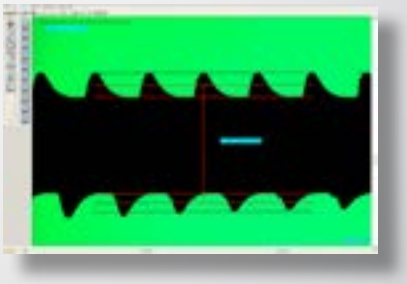
**KITEC** can be switched between twenty-five languages, a feature that has led to its use all over the world. This is not only of interest to international clients. In large companies with staff from many different nations, software training is made much easier.

Updates for **KITEC** measurement software are generally free of charge. With the corresponding 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 upgrade from **KITEC ECO** to **KITEC PRO** or **MAX** at the original interim price. Your old version will not lose its value. Of course, we cannot forget telephone support: Our number is contained in the **KITEC** header bar.

**Versions:** **KITEC** measurement software is available in three versions. **KITEC ECO** includes basic measuring functions such as distance-, radius- and circular measurements, angle measurements and several other basic measuring functions (see function list). For users who like to assign functions to hot keys, there is the ability to create 30 hot keys in **KITEC ECO**.



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# KITOTEC

**KITEC PRO** contains basically all measurement functions that are available : Special circular measurements, measuring functions for PCBs, thickness measurements, thread-cutting-, milling- and drilling measurement functions, DFX overlay, focus calculation and many other special functions. It would take too long to list all of the capabilities here; therefore they are detailed in the function overview on the website. There you can also download and test the demo versions of the **KITEC** measurement software.



**KITEC MAX** has two additional function levels: The buttons located in the left column activate the measurements point, line, circle and circle segment. The three buttons below are intended for the distance, angle and best-fit line. With the four upper measuring functions, all relevant objects or measuring points are marked. After that the measurements can be linked up as required in the calculator window (button with the PC).

The second function level includes the readout of X, Y and Z values. **KITEC MAX** can as a rule be combined with nearly any measurement system. Regardless of whether the measuring tables are from Märzhäuser, Uhl, Prior, Steinmeyer or Micos, the XY-axes are read and calculated in **KITEC MAX**. 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 **KITEC**. On our website is a list of the measurement 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.



The scope of features in **KITEC PRO** and **KITEC MAX** is virtually unbeatable in relation to price. And if a measurement function is not in **KITEC** which you absolutely require for your company: we would be happy to program a special measuring function for you.

Delivery: Free shipping, including packaging
Payment: 30 days clear (subject to prepayment).
Updates: Free via internet download
Guarantee: 24 months

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# Matrix for systems KITO 10 to KITO 40 and possible components

| Components | KITO 10 | KITO 20 | KITO 30 | KITO 40 |
|---|---|---|---|---|
| LED-R | x | x | x | x |
| LED-U | / | x | x | x |
| LED-SG | x | x | x | x |
| KLQ-LED-9 | x | x | x | x |
| LED-SG | x | x | x | x |
| PPL-B | x | x | x | x |
| MT-25 | x | / | / | / |
| RT-85 | x | / | / | / |
| MTU-50-MS | x | x | / | / |
| KT-100 | x | / | / | / |
| EK-100 | x | x | / | / |
| EK-150 | x | x | / | / |
| MTM-100 | x | x | / | / |
| MTM-150 | x | x | / | / |
| MT-200-100 | x | x | / | / |
| KITEC ECO | x | x | x | x |
| KITEC PRO | x | x | x | x |
| KITEC MAX | x | x | x | x |

**x = combinable / = not combinable**

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# KIMAG: The measuring magnifier with LED light



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 graduation 0.1 mm 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 resolution 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.

In optics, an achromatic system is taken to mean a system of two lenses, consisting of glasses with a differing Abbe number (varying strength of colour dispersion). The system contains a convex lens (usually made of crown glass) and a dispersing lens with lower Abbe number and thus stronger colour dispersion than the convex lens (usually made of flint glass). In this way the chromatic aberration which every convex lens has can be corrected for two wavelengths. This means that the system has the same back focal length for both these colours. The technical data is summarised again here:

| | |
|---|---|
| Order No. | **KIMAG 10** |
| Magnification factor: | 10x |
| Focusable: | Yes |
| Measuring length: | 30 mm |
| Lens coverage: | 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 |



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