

Centring Microscope ZM1

Revision No.: 07



The Centring Microscope ZM1 is a sturdy, optical precision instrument to be attached on machines, control devices, measuring devices and equipment.



Technische
Mikroskopie

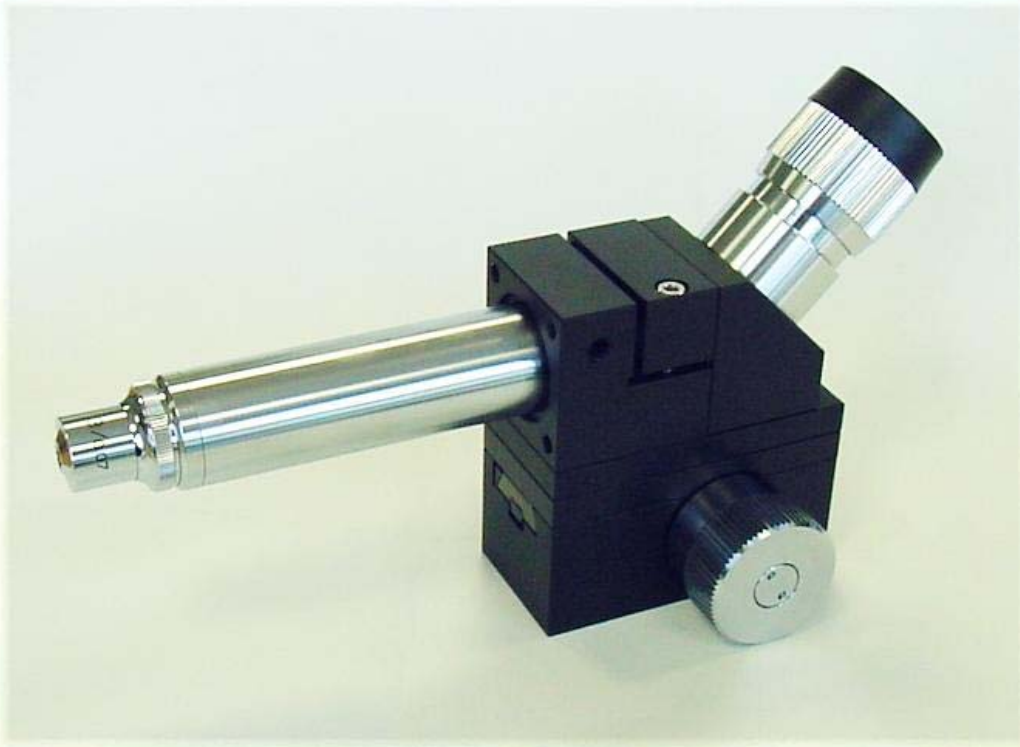
The Centring Microscope ZM1

can be fixed at a machine assembled or with a focus element. During the alignment, the object will be moved. To align the object it has to be brought close to the integrated crosshair. Alternatively, radiuses or holes can be positioned exactly on the integrated concentric circles.

For an ergonomic view the image will be transmitted with a 45° prism to the eyepiece, which magnifies 15:1. The graticule can be focussed by adjusting the lens with a multiple thread (dioptré compensation).

The high quality, coated optics and the complete metallic design ensures a high durability.

Other equipment variants upon request.

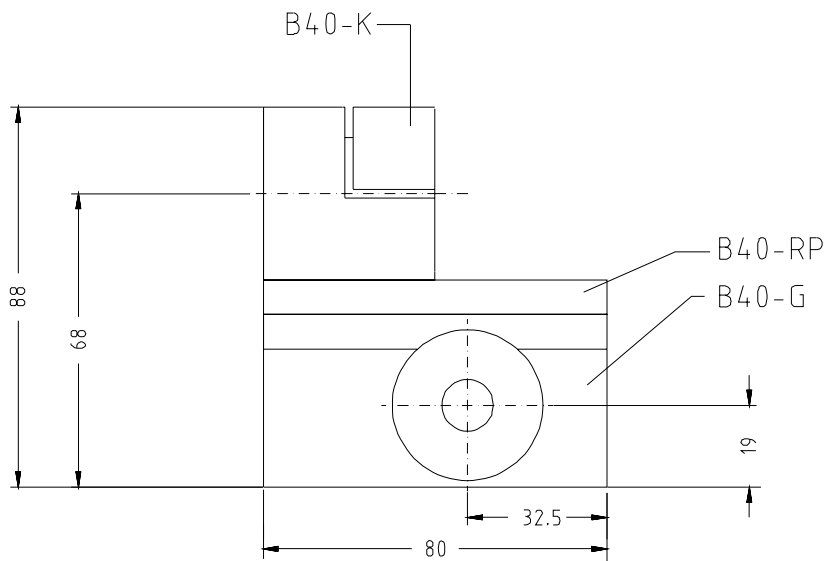
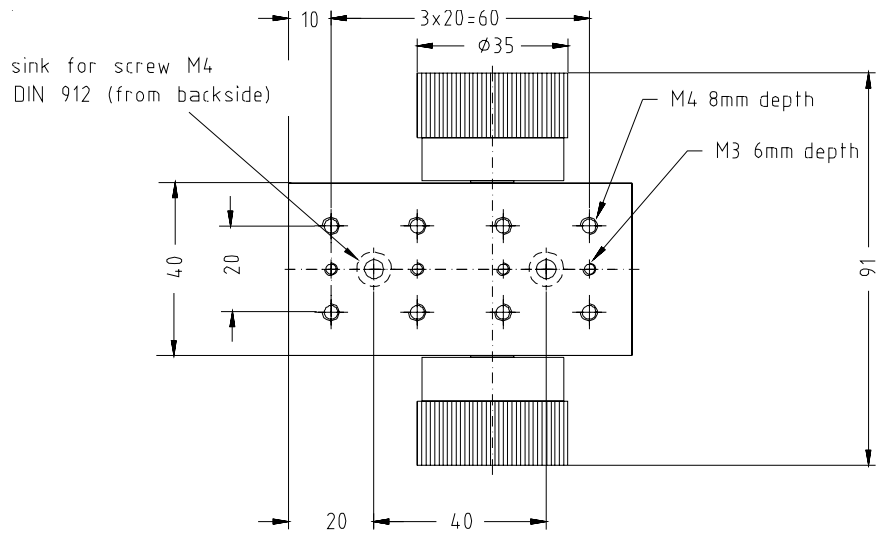


To bring the object in focus, a bearing box with clamping cube (**ZM1-TG**) or a focus element integrated in the socket can be used (**ZM1-F with straight tube**).





The optionally available focus element **ZM1-TG** consists of components of our modular component system: clamping cube B40-K, raster plate B40-RP and a bearing box with dovetail bearing and gear rack B40-G (further bearing box variants upon request).



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optional incident light illumination for Centring Microscopes



Order No.:
RL4-LED

LED ring light for objectives
OP1-Axx with 8 LEDs



Order No.:
TR7-N

1-channel transformer for
RL4-LED

stepless brightness control via
adjusting knob



C-Mount Adapter for assembly on the eye-piece



Order No.:

MOK-CM

C-Mount Adapter for assembly on existing Centring Microscopes, the graticule is still visible (here shown with VM4-USB)

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USB digital color camera with C-Mount



Order No.:

VM4-USB

Digital camera for the c-mount adapter MOK-CM (not included) to store images or view live picture.

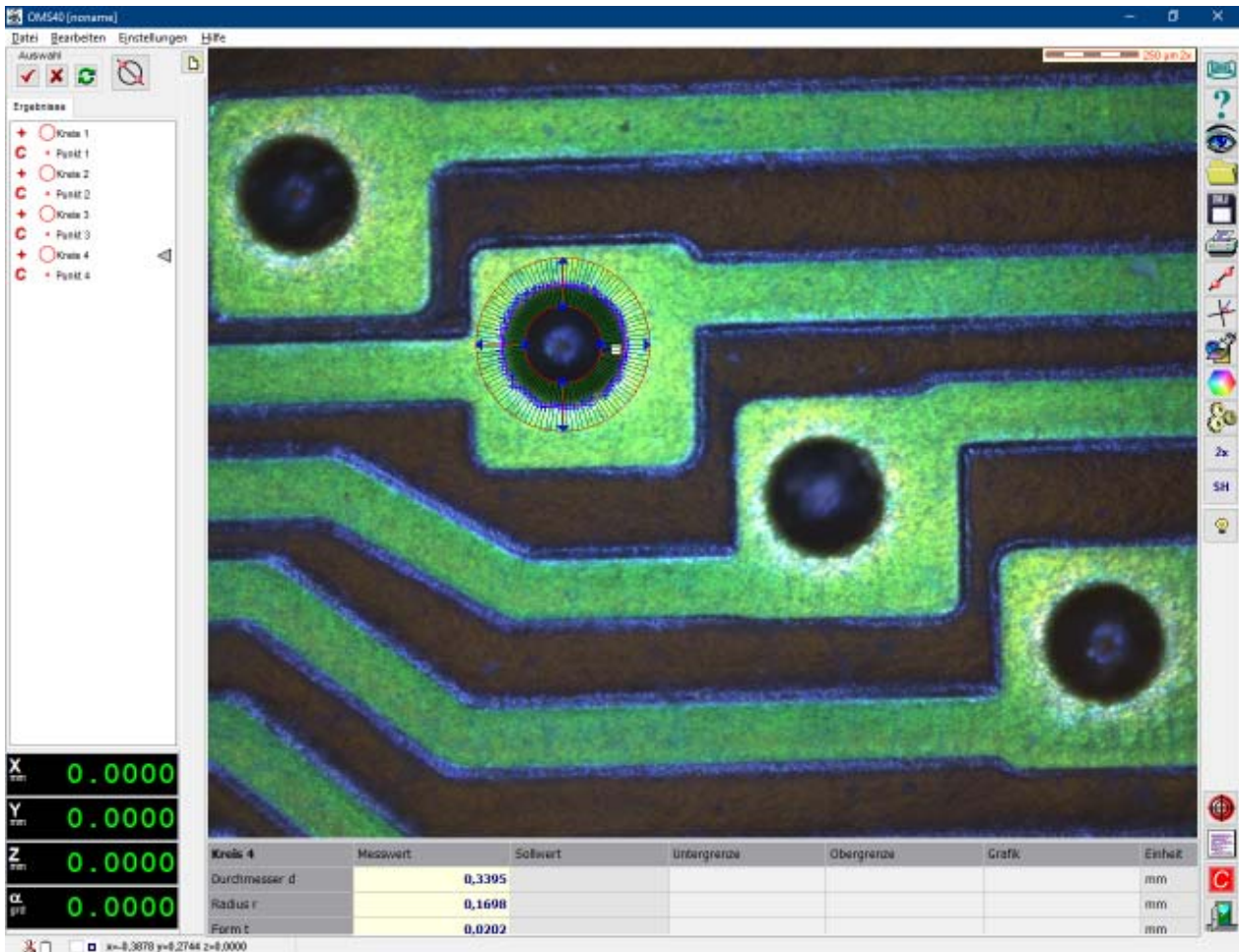
Resolution of the CMOS-sensor:
1280x1024 pixel
max. 60 frames / sec.

USB 3.0 interface

incl. PC-software for the image acquisition



Manual measurement software OMS-LT



Order No.:

OMS-LT

With the easy measurement software **OMS-LT** and the USB camera VM4-USB, various applications from picture documentation up to high accurate measurements with manual or automatic edge detection are possible.

The geometric elements point / line / circle and distances can be measured and combined very flexible.

The measurement values can be stored in a text protocol or exported in combination with the video image plus geometry elements as RTF/PDF or JPG/BMP file.

The values can also be exported as CSV textfile for further calculations in a spreadsheet software.

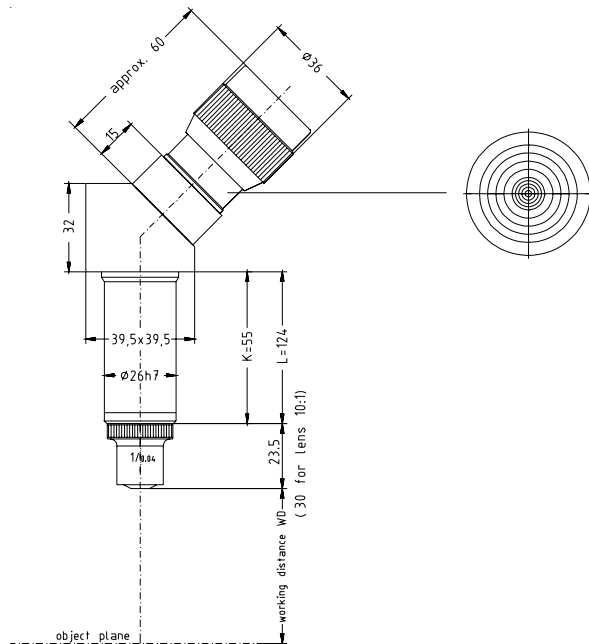
Using standard display masks or converted DXF drawings, a simple good / bad evaluation or a custom alignment can be done.



Centring Microscopes with 45° prism and image erection



A graticule of Ø19 with crosshair and concentric circles is built in the eyepiece.



Following designs are available:
long or short tube.

Centring Microscopes with short tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K1	1 : 1	180	10 x	26
ZM1-K2	2 : 1	80	20 x	11
ZM1-K3	3 : 1	35	35 x	7
ZM1-K4	4 : 1	15	45 x	5,4
ZM1-K5	5 : 1	14	50 x	4
ZM1-K6	6 : 1	14	70 x	3,3
ZM1-K10	10 : 1	7	125 x	1,9

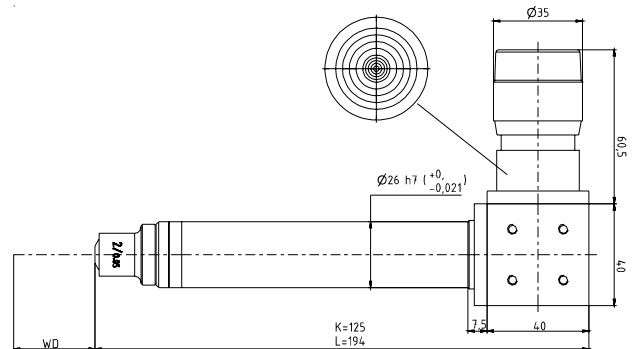
Centring Microscopes with long tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L1	1 : 1	105	20 x	11
ZM1-L2	2 : 1	62	40 x	6
ZM1-L3	3 : 1	27	60 x	4
ZM1-L4	4 : 1	11	75 x	3,1
ZM1-L5	5 : 1	12	100 x	2,5
ZM1-L6	6 : 1	12	120 x	2
ZM1-L10	10 : 1	6	185 x	1,3

Centring Microscopes with 90° prism for image erection



A graticule of $\varnothing 19$ with crosshair and concentric circles is built in the eyepiece.



Following designs are available:
long or short tube.

Centring Microscopes with short tube and 90° prism for image erection

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K9P1	1 : 1	180	10 x	26
ZM1-K9P2	2 : 1	80	20 x	11
ZM1-K9P3	3 : 1	35	35 x	7
ZM1-K9P4	4 : 1	15	45 x	5,4
ZM1-K9P5	5 : 1	14	50 x	4
ZM1-K9P6	6 : 1	14	70 x	3,3
ZM1-K9P10	10 : 1	7	125 x	1,9

Centring Microscopes with long tube and 90° prism for image erection

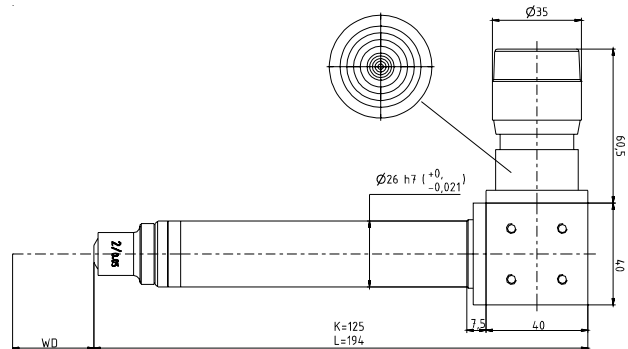
order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L9P1	1 : 1	105	10 x	11
ZM1-L9P2	2 : 1	62	20 x	6
ZM1-L9P3	3 : 1	27	35 x	4
ZM1-L9P4	4 : 1	11	45 x	3,1
ZM1-L9P5	5 : 1	12	50 x	2,5
ZM1-L9P6	6 : 1	12	70 x	2
ZM1-L9P10	10 : 1	6	125 x	1,3



Centring Microscopes with 90° mirror



The Centring Microscope with a 90° mirror does not erect the image. That means that the image will be shifted horizontally.



Following designs are available:
long or short tube.

Centring Microscopes with short tube and 90° mirror

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-K9S1	1 : 1	160	10 x	22
ZM1-K9S2	2 : 1	75	20 x	10
ZM1-K9S3	3 : 1	34	35 x	7
ZM1-K9S4	4 : 1	15	45 x	5,4
ZM1-K9S5	5 : 1	14	50 x	4
ZM1-K9S6	6 : 1	14	70 x	3,3
ZM1-K9S10	10 : 1	7	125 x	1,9

Centring Microscopes with long tube and 90° mirror

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-L9S1	1 : 1	100	10 x	10
ZM1-L9S2	2 : 1	62	20 x	6
ZM1-L9S3	3 : 1	27	35 x	4
ZM1-L9S4	4 : 1	11	45 x	3,1
ZM1-L9S5	5 : 1	12	50 x	2,5
ZM1-L9S6	6 : 1	12	70 x	2
ZM1-L9S10	10 : 1	6	125 x	1,3

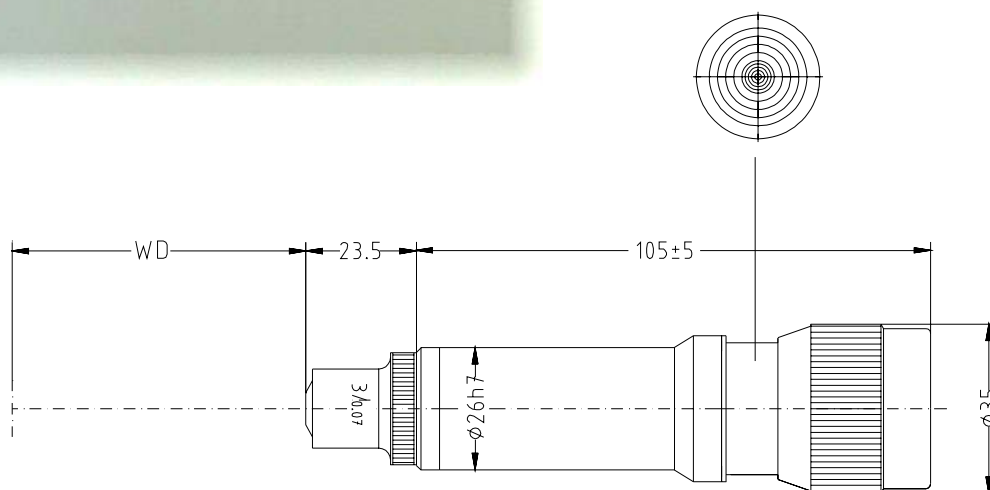
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Centring Microscopes with straight tube and image erection



Due to the prism for the image erection, the tube gets shorter.



Centring Microscopes with straight tube and prism for image erection

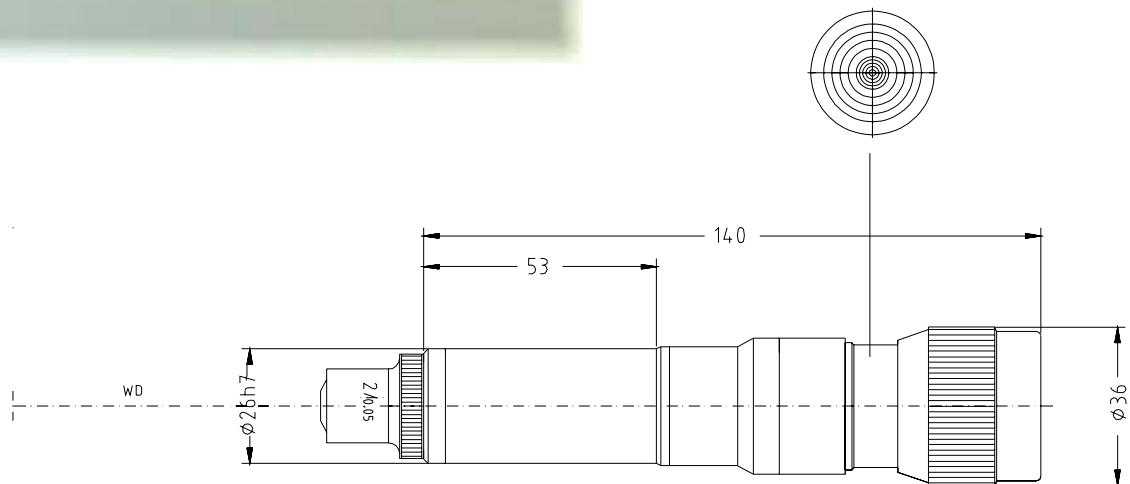
order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-GP1	1 : 1	350	5 x	60
ZM1-GP2	2 : 1	97	18 x	16
ZM1-GP3	3 : 1	40	28 x	10
ZM1-GP4	4 : 1	18	40 x	7.2
ZM1-GP5	5 : 1	14	58 x	5
ZM1-GP6	6 : 1	14	66 x	4,3
ZM1-GP10	10 : 1	6	123 x	2,3



Centring Microscopes with straight tube



The Centring Microscope with a straight tube does not erect the image. That means that the image will be rotated by 180°.



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Centring Microscopes with straight tube

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-G1	1 : 1	235	7,5 x	38
ZM1-G2	2 : 1	90	20 x	14
ZM1-G3	3 : 1	38	30 x	9
ZM1-G4	4 : 1	18	45 x	6,5
ZM1-G5	5 : 1	15	60 x	5
ZM1-G6	6 : 1	15	70 x	4
ZM1-G10	10 : 1	7	130 x	2,2

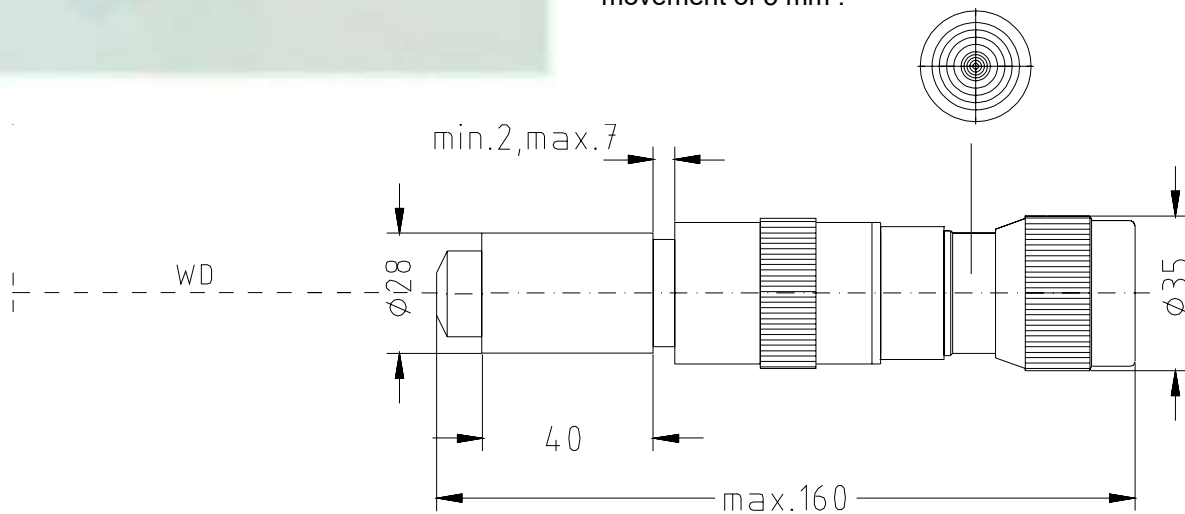


Centring Microscopes with integrated focus



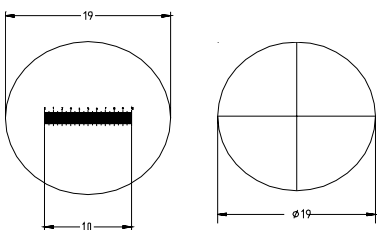
The Centring Microscope with a straight tube does not erect the image. That means that the image will be rotated by 180°.

Inside the tube is a fine thread with a range of movement of 5 mm .



Centring Microscopes with integrated focus

order no.:	lens	working distance WD (mm)	total magnification	object diameter (mm)
ZM1-F1	1 : 1	270	6 x	45
ZM1-F2	2 : 1	86	20 x	14,6
ZM1-F3	3 : 1	38	30 x	9
ZM1-F4	4 : 1	16	40 x	6,8
ZM1-F5	5 : 1	13	58 x	5
ZM1-F6	6 : 1	13	70 x	4,1
ZM1-F10	10 : 1	6	130 x	2,2



All Centring Microscopes can be equipped with graticules with measurement scale (10 mm in 100 pitches) or a single crosshair (5 µm linewidth).



Machine Centring Microscope MZM



MZM-30 here with optional TR7-N

Universal centring microscope to set up tool machines (e.g. boring and milling machines). The edges of a workpiece can be positioned, rotary stages can be centered or machine spindles can be aligned.

The centring microscope is fixed in the machine instead of the tool. Different fixture tapers and draw bolts are available on request.

With the 30:1 total magnification of the MZM-30 and the field of view of 5 mm, a centering accuracy of 5µm can be achieved.

The image is true erect and with high contrast.

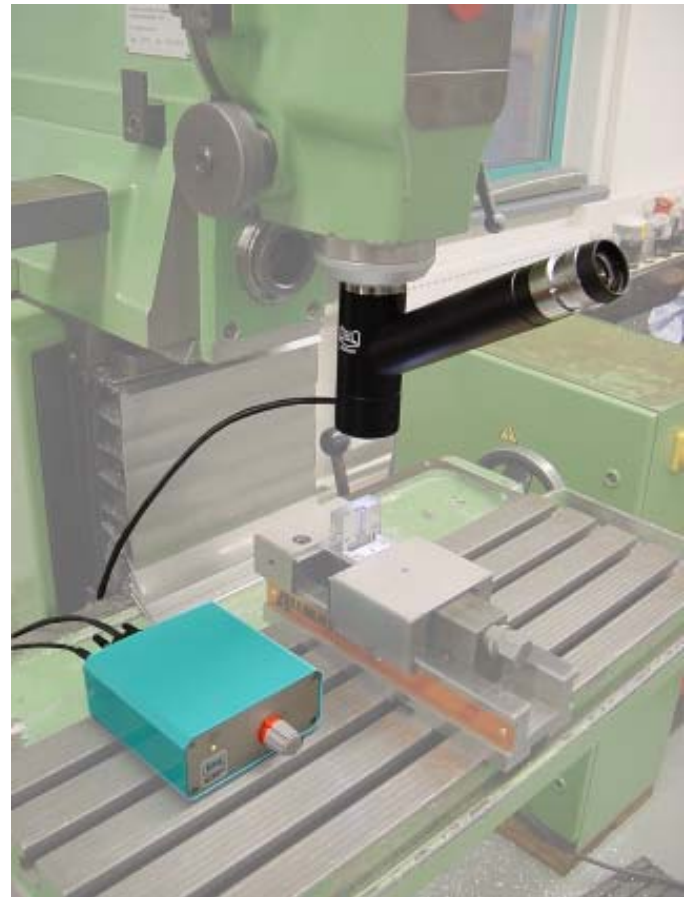
The eye-piece has a graticule with crosshair and concentric circles.

LEDs are used for the incident light.



MZM-30A with integrated rechargeable battery for mains power independent operation.

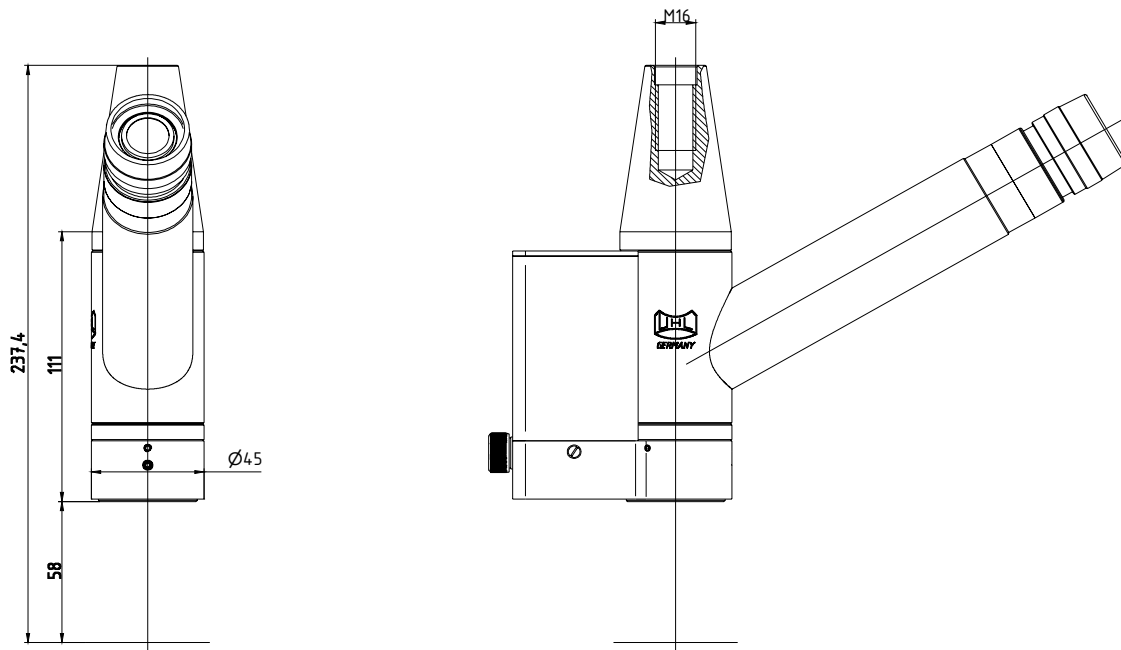
The battery can be recharged directly inside the instrument with the supplied charger.



MZM-CAM WiFi camera for mains power independent wireless image transfer of the eye-piece image to an iOS or Android device.

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machine centring microscope

order no.:	total magnification	working distance WD (mm)	object diameter (mm)	fixture
MZM-30	30 x	60	5	short taper SK40 DIN 2080
MZM-30A	30 x	60	5	short taper SK40 DIN 2080

Pull studs:

MZM.24-1 Pull stud
DIN 69872 Type A

MZM.24-2 Pull stud
ISO 7388

MZM.24-3 Pull stud with groove
and internal thread
M16

MZM.24-4 Pull stud with
buttress thread
S20x2

MZM-CAM WiFi camera



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related to MZM-30:
TR7-N transformer for LED incident light

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