

Measuring Microscope VMM 100



Measuring on high speed and Viewing with 1000x magnification – the VMM 100 can do both.

Exact and versatile in measuring

- The measuring stage grants an accuracy $\leq 6 \mu\text{m}$ for over 100 mm measuring length.
- Optical inspection, i.e. non-contact inspection of sizes and forms of metal, plastic and ceramic parts.
- Optical inspection also include the free-force measuring test of deformable parts e.g. rubber.
- Usable for checking primary samples, spot tests and even up to series inspection of moulds, bended and die-casting parts.
- Inspection of profile gauges, templates, cutting tools, springs etc.

Top - the performance

- Developed from practical experience for practical usage.
- Guided roll-bearing coordinated stage with a measuring range of 100 x 50 mm.
- Optical system with telecentric ray path.
- Changeable objectives.
- Upright and laterally true image.
- Opto-electronic measuring system with a failure-free readable numerical display.
- 0.0005 mm resolution.
- Incremental-divided steel scale.
- Fast and fine adjustment of the measuring stage.
- Swivel stage (optional) for mechanical alignment of workpiece.
- Transmitted and coaxial incident lights plus additionally oblique incident light.
- Stepless brightness control.

The VMM 100 universally applicable in

- The production of sub-contracting parts for the automobile industry.
- Production branches of electrical engineering and electronic industry.
- Aeronautical and aerospace industries, test laboratories, universities etc.
- Research and development divisions of the different industries.

The VMM 100 detects everything

- Changeable micro objectives for up to 1000x magnification.
- For metallurgical examination, plus the observation of material fractures.
- Coaxial incident light provides the perfect illumination.
- Digital image processing by means of an assembled video camera.



**Measuring and displaying, or do you wish more -
e.g. calculating, memory and printing of measured results.**



**UHL Measuring Microscope VMM 100
without Digital Read-out**

Order-No. VM3-MT01

consisting of following components:

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1 Main unit with vertical column and adjustable height objective holder, integrated coaxial incident and transmitted lights with separate brightness control, 120/230 VAC, 50/60 Hz | VM3-001 |
| 1 Measuring stage, measuring range 100 x 50 mm, with opto-electronic measuring system, cable for the signal transmission, fast and fine adjustment | VM3-601 |
| 1 Eye-piece 10x magnification, monocular, eye cup with integrated crosshair plate | VM3-410 |
| 1 Measuring objective 2:1, free-working distance 85 mm | OP1-M02 |



The above mentioned components are ready-packed for delivery with following standard accessories:

- 1 Mains adapter 100 to 240 VAC, 47 to 63 Hz, 11 to 13 VDC, 55 W
- 1 Operations manual
- 1 Factory calibration certificate
- 1 Dust protective cover

Digital Read-out QC100

Order-No.

Digital Read-out for two axis (coordinates X and Y) and digital output RS232, 120/230 VAC, 50/60 Hz.

QC120

- Numerical interval 0.0005 mm/0.00002 in.
- Metric/Inch conversion
- Measurements performed with a fixed and freely assignable origin point of coordinates
- Switchable counting direction of display

Digital Read-out for three axis (coordinates X, Y and Z)

QC130



Ready-packed for delivery with following standard accessories:

- 1 Cable
- 1 Operations manual

Product Programme



Digital Read-out QC200

Order-No.

Digital Read-out for two axis (coordinates X and Y, 7 decades) with alphanumerical display for functions, calculating functions for geometrical combination of the measured values, memorized values, digital output RS232 and parallel port for printer 120/230 VAC, 50/60 Hz.

QC220

Digital Read-out for three axis (X, Y and Z)

QC230

Ready-packed for delivery with following standard accessories:

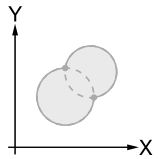
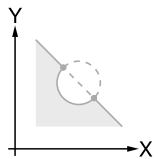
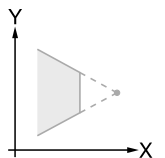
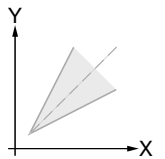
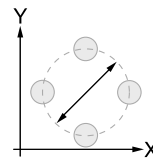
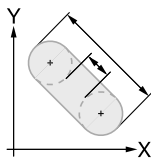
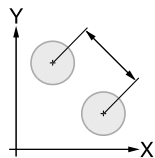
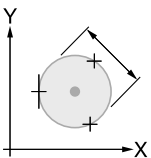
- 1 Cable
- 1 Operations manual

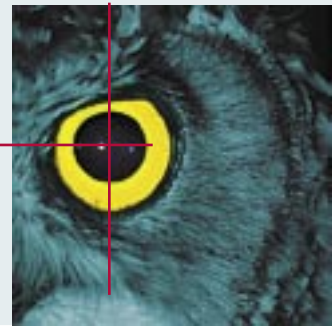
Programmable Measuring Functions



- No manual calculation necessary.
- No mechanical workpiece alignment owing to the calculated transformation of coordinates.
- Measuring of diameters on pitch circles of 3 to 50 points.
- Right-angled cartesian and polar coordinate systems.

- Combination of up to 50 measured values per geometrical element.
- Location of origin points at the user's choice.
- PRESET function
- Programmable measuring sequences (max. 250 measuring steps).





Special accessories for the Measuring Microscope VMM 100

Oblique incident light for 230 V

Order-No. **VM4-503**

consisting of following components:

- 1 Light unit, suitable for all measuring objectives, dual-arm fibre optic light guide
- 1 Cold light source VMP-GL, 230 VAC, 50/60 Hz; 30 W



Ready-packed for delivery with following standard accessories:

- 1 Cable
- 1 Operations manual

Swivel stage

Order-No. **VM3-610**

- 2 T-slots, stage surface 230 x 160 mm, swivelling range +/- 7.5°



Technical Data

UHL Measuring Microscope VMM 100 Main unit with measuring stage

Measuring stage:

Measuring range:	100 x 50 mm
Guiding:	roll bearing
Movement:	ergonomic fast and fine adjustment
Fasteners:	2 T-slots
Max. weight limit:	10 kg
Measuring system:	opto-electronic, incremental divided steel scale
Resolution:	0.0005 mm
Accuracy limit valid for working temperature range:	$2 \mu\text{m} + 0.02 \times L \mu\text{m}$ (L in mm)
Optic holder:	height adjustable by coaxial coarse and fine drive, movement 150 mm

Optical system:

Image:	upright and laterally true image
Total magnification:	20x*
Eye-piece:	monocular, dioptic compensation, integrated crosshair plate
Magnification:	10x
Objective:	telecentric measuring objective 2:1*, changeable, bayonet mount
Object field diameter:	10 mm*
Numerical aperture:	0.06*
Free working distance:	85 mm* (see below)
Lighting:	integrated transmitted light and coaxial incident light with stepless brightness control, each 20 W

*see also changeable measuring objectives under Special Accessories

General:

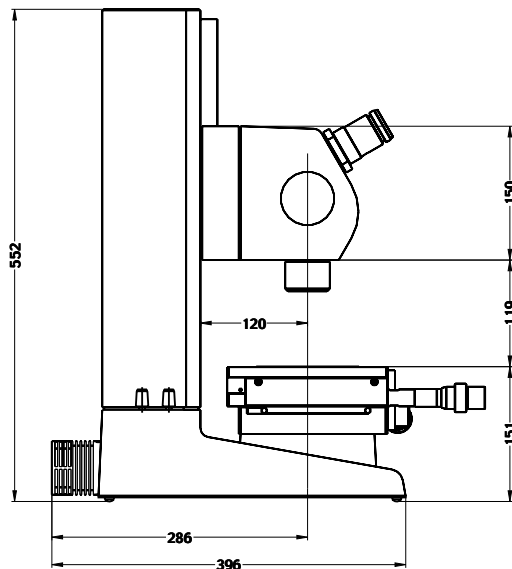
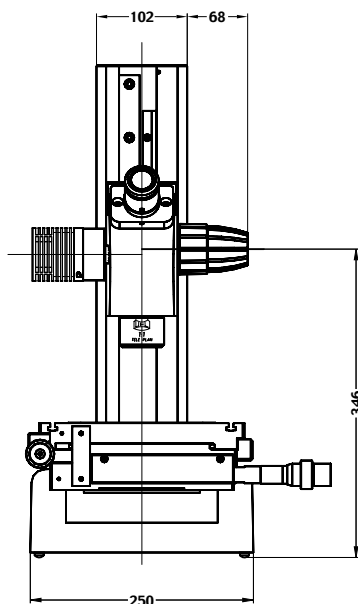
Operating temperature:	10 °C to 40°C
Working temperature:	20 +/-0.5 °C
Storage temperature:	-10 °C to 60° C
Power supply:	120/230 VAC, 50/60 Hz
Dimensions:	see drawing
Weight (VM3-MT01):	26 kg

Digital Read-out QC100:

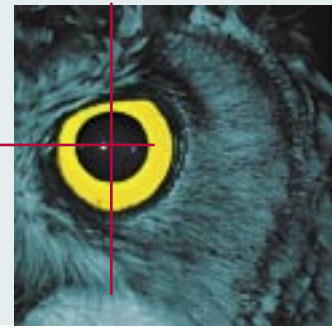
Display:	1 LCD-screen 150 mm screen diagonal (coordinates X and Y)
Measuring values:	11.5 mm numerical height
Numerical intervals:	0.0005mm/0.00002 in.
Casing:	metal, painted
Digital output:	RS 232
Operating temperature:	0 °C to 45 °C
Power supply:	120/230 VAC, 50/60 Hz
Dimensions (WxDxH):	292 x 215 x 215 mm
Weight (without cable):	4.8 kg

Digital Read-out QC200:

Display:	1 LCD-screen 150 mm screen diagonal (coordinates X and Y as well as functions)
Measuring values:	11.5 mm numerical height
Numerical intervals:	0.0005mm/0.00002 in., 00°00'01"
Casing:	metal, painted
Digital output:	RS 232
Operating temperature:	0 °C to 45 °C
Power supply:	120/230 VAC, 50/60 Hz
Dimensions (WxDxH):	292 x 215 x 215 mm
Weight (without cable):	4.8 kg



Special Accessories



Measuring objectives

Lens magnification	Total magnification	Object-field diameter	Numerical aperture	Free-working distance	Focusing depth	Order-No.
1 : 1	10x	20 mm	0.03	88 mm	0.3 mm	OP1-M01
2 : 1	20x	10 mm	0.06	85 mm	0.08 mm	OP1-M02
5 : 1	50x	4 mm	0.13	62 mm	0.02 mm	OP1-M05
10 : 1	100x	2 mm	0.20	52 mm	0.01 mm	OP1-M10
20 : 1	200x	1 mm	0.35	30 mm	0.002 mm	OP1-M20



Micro objectives Plan Fluor for metallurgical examination

Suitable for both transmitted light and coaxial incident light. To be used with a single bayonet mount.

Lens magnification	Total magnification	Object-field diameter	Numerical aperture	Free-working distance	Focusing depth	Order-No.
2.5 : 1	25x	8.0 mm	0.075	5.50 mm	0.05 mm	OP1-L02
5 : 1	50x	4.0 mm	0.100	10.50 mm	0.03 mm	OP1-L05L
10 : 1	100x	2.0 mm	0.200	10.50 mm	0.01 mm	OP1-L10L
20 : 1	200x	1.0 mm	0.400	10.50 mm	0.002 mm	OP1-L20L
50 : 1	500x	0.4 mm	0.600	3.60 mm	0.001 mm	OP1-L50L
100 : 1	1000x	0.2 mm	0.700	3.60 mm	0.0005 mm	OP1-L99L

Single bayonet mount for micro-objectives

Order No. **VM4-308**

Adapter for micro objectives 2.5:1 to 100:1

C-mount adapter

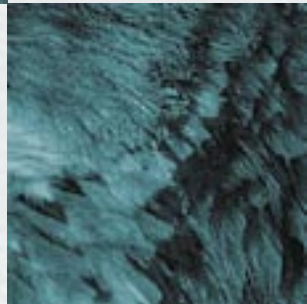
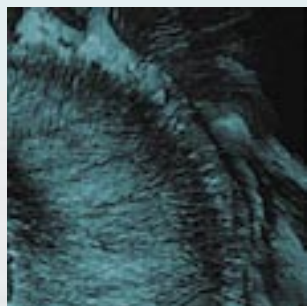
Order No. **VM3-401**

Allows the use of a video camera instead of the eye-piece (TV-image laterally reversed) and the connection of an image processing software (i.e. UHL-OMS)



Foot switch

2 functions: setting the display to zero and for triggering data transfer to a computer or printer. Connectable to Digital Read-outs QC100 and QC200



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