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CONTOUR MEASURING?
Just do it!
...with the MK-CMS-2.x!

MK-CMS-2.x - Series...

MK-CMS-2.0

MK-CMS-2.1

Figure shows the MK-CMS 2.1 system in the ContourPirate-Edition

MK-CMS-2.2

Figure shows the MK-CMS 2.2 system in the ContourRacer-Edition

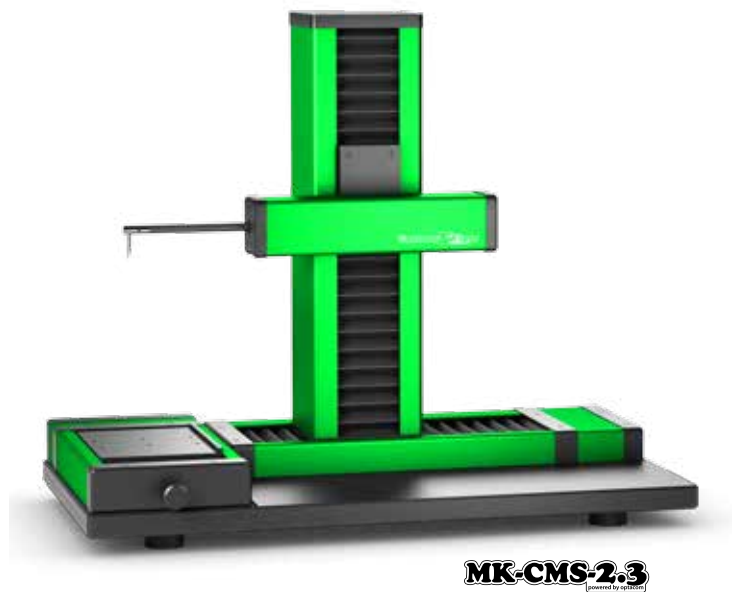**MK-CMS-2.3**

Figure shows the MK-CMS 2.3 system in the ContourViper-Edition

If you find conventional contour measuring machines too expensive, too big, too unwieldy or too complicated to operate, then we have the solution for you with the MK-CMS-2.x series!

The basic version MK-CMS-2.0 is a complete 3-axis contour measuring machine which is a match for any measuring problem in the measuring room and in the production.

The MK-CMS-2.0 is the right machine for measurement tasks which requires only one scanning direction.

Only the Y-adjustment and the zenith search are resolved by the customer in the basic version.

All machines of the MK-CMS-2.x series are equipped with preloaded zero-play linear ball bearings in all axes.

Contactless, optical incremental measuring systems in the X-, Z- and T-axis are just as much a matter of course as the intuitive "MK-CMS Edition" software suite from the optacom company.

MK-CMS-2.0* - the basic version

Figure shows the MK-CMS 2.0 system in the ContourKing-Edition
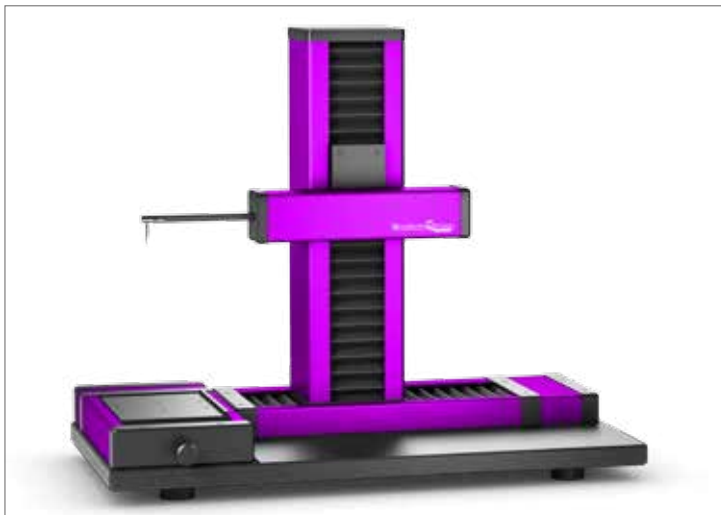
Scope of delivery:

Calibration standard	Quick-release fastener

Standard sytlus tip 20.5 mm

The Y-adjustment and the zenith search are resolved by the customer in the basic version.

Resolution in X-, Z- and T-axis:	0.05 µm	Accuracy:	+/- (2 + L/50) µm
Measuring range X:	190 mm	Straightness:	2 + L/50 µm
Measuring range Z:	275 mm	Table load:	100 kg
Measuring range Y:		**Order-no.:**	**MK-CMS-2.0***

MK-CMS-2.1* - with manual Y-table

Figure shows the MK-CMS 2.1 system in the ContourQueen-Edition

Scope of delivery:

Y-table manual	Calibration standard
Quick-release fastener	Standard sytlus tip 20.5 mm

The manual Y-adjustment / zenith search are integral components of the machine in this version.

Resolution in X-, Z- and T-axis:	0.05 µm	Accuracy:	+/- (2 + L/50) µm
Measuring range X:	190 mm	Straightness:	2 + L/50 µm
Measuring range Z:	275 mm	Table load:	100 kg
Measuring range Y:	40 mm	**Order-no.:**	**MK-CMS-2.1***

*Supplied without PC

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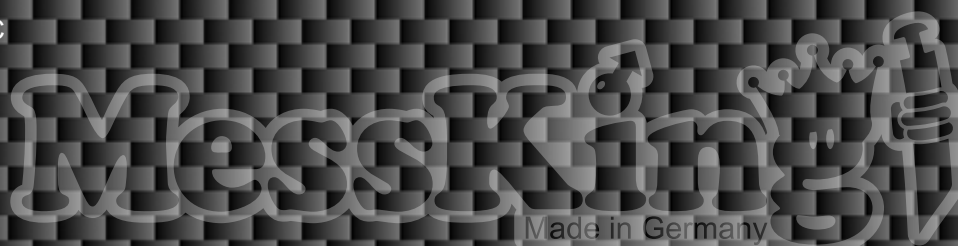
MK-CMS-2.2* - with automatic Y-table

Figure shows the MK-CMS 2.2 system in the ContourSamurai-Edition

Scope of delivery:

Y-table automatic	Calibration standard
Quick-release fastener	Standard sytlus tip 20.5 mm
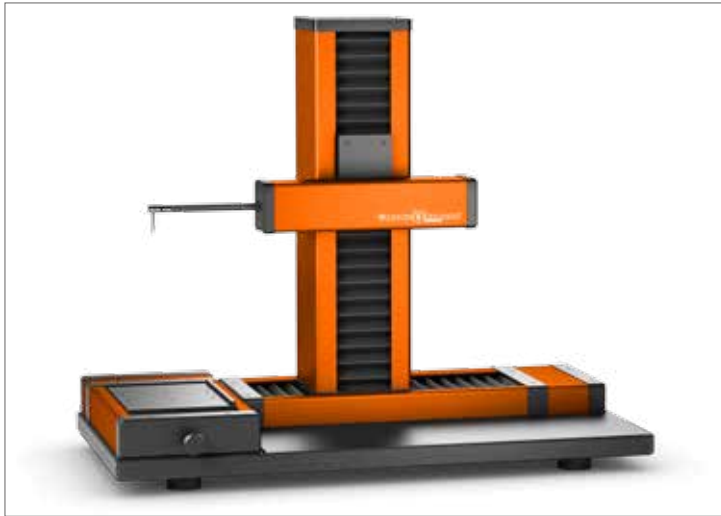
The automatic Y-adjustment / zenith search are integral components of the machine in this version.

Resolution in X-, Z- and T-axis:	0.05 µm	Accuracy:	+/- (2 + L/50) µm
Measuring range X:	190 mm	Straightness:	2 + L/50 µm
Measuring range Z:	275 mm	Table load:	100 kg
Measuring range Y:	40 mm	**Order-no.:**	**MK-CMS-2.2***

MK-CMS-2.3* - with automatic Y-table and Top-Down module

Figure shows the MK-CMS 2.3 system in the ContourTitan-Edition

Scope of delivery:

Y-table automatic	Quick-release fastener
Top-Down calibration standard	Stan. stylus tip 20.5 mm / Double stylus tip 34 mm
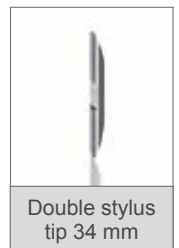
Top-Down measurements are an integral part of the machine in this version.

Resolution in X-, Z- and T-axis:	0.05 µm	Accuracy:	+/- (2 + L/50) µm
Measuring range X:	190 mm	Straightness:	2 + L/50 µm
Measuring range Z:	275 mm	Table load:	100 kg
Measuring range Y:	40 mm	**Order-no.:**	**MK-CMS-2.3***

*Supplied without PC

MK-CMS-2.x - Accessories and options

Y-table manual

Measuring range Y: 40 mm

Order-no.: MK-YTM

Y-table automatic

Measuring range Y: 40 mm

Order-no.: MK-YTA

Top-Down calibration standard

Calibration standard

Order-no.: MK-CMS-TDN

Top-Down-module*

Calibration standard, Quick-release fastener, Conical Top-Down stylus, Software extension module for Top-Down measurements
*Requires the automatic Y table.

Order-no.: MK-CMS-TDK

Quick-release fastener

For stylus tips with a diameter of 3.5 mm (stylus tips are compatible with optacom stylus tips on page 6).

Order-no.: MK-TSA

Miniature stylus arm

For stylus tips with a diameter of 1.0 mm (sty. tips are comp. with optacom stylus tips). Includes a quick-release fastener. Stand. length 50 mm (other lengths upon request); delivery without stylus tips!

Order-no.: MK-Mini-TA

Simple emergency stop

Industrial grade emergency stop switch. The additional safety for harsh production environments.

Order-no.: MK-Not-Aus-Light

Console with joystick and emergency stop

Console with joystick for exact control over your MK-CMS system. Includes an emergency stop switch.

Order-no.: MK-Pult

PC-Speedy*

Midi-Tower PC with Windows OS, optacom Software Suite „MK-CMS Basic-Edition"
*Picture similar

Order-no.: MK-PC

Stylus tips, quick-release fastener and miniatur stylus arms

Stylus tip ø 3.5 mm
made of carbide, ø 3.5 mm / R: 25 µm / A: 12°

Length	Order-no.:
20.5 mm	101-010-205
33 mm	101-010-330

A quick-release fastener with the order-no.: MK-TSA is required for this stylus tip.

Stylus tip conical ø 3.5 mm
made of carbide, ø 3.5 mm / R: 25 µm / A : 24°

Length	Order-no.:
20.5 mm	101-110-205
33 mm	101-110-330

A quick-release fastener with the order-no.: MK-TSA is required for this stylus tip.

Stylus tip ø 1.0 mm
made of carbide, ø 1.0 mm / R: 25 µm / A: 19°

Length	Order-no.:
6 mm	101-010-060
10 mm	101-010-100
13 mm	101-030-130

A miniature stylus arm with the order-no.: MK-Mini-TA is required for this stylus tip.

Stylus tip conical ø 1.0 mm
made of carbide, ø 1.0 mm / R: 25 µm / A: 24°

Length	Order-no.:
6 mm	101-110-060

A miniature stylus arm with the order-no.: MK-Mini-TA is required for this stylus tip.

Double stylus tip
made of carbide, ø 3.5 mm / R: 25 µm / A: 2 x 12°

Length	Order-no.:
34 mm	101-230-340

A quick-release fastener with the order-no.: MK-TSA is required for this stylus tip.

Vises

Rotating swivel vise CHM-80

▸ Angle adjustment via a 3'-Nonius
▸ Adjustment screw to allow precise angle adjustment
▸ Form-fitted clamping in any desired angle position via locking screws

Length:	160 mm
Width:	110 mm
Jaw width:	75 mm
Span:	80 mm
Height:	137 mm
Horizontal adjustment:	360°
Swivel adjustment:	+/- 60°
Parallelism:	3 µm / 100 mm
Perpendicularity:	4 µm / 100 mm
Order-no.:	**101-202-003**

Rotating swivel vise CHM-SC04

▸ Angle adjustment via a 3'-Nonius
▸ Adjustment screw to allow precise angle adjustment
▸ Form-fitted clamping in any desired angle position via locking screws

Length:	178 mm
Width:	75 mm
Chuck-Diameter	112 mm
Chuck-Height	58 mm
Inside-Clamping	ø 32 - 84 mm
Outside-Clamping	ø 3 - 90 mm
Height:	137 mm
Horizontal adjustment:	360°
Swivel adjustment:	+/- 60°
Order-no.:	**101-202-005**

Standard vise A-25

▸ Made out of high-qual. alloy steel, hardened and grinded
▸ Very precise, closes absolutely gap-free
▸ Two integrated side clamping slots

Length:	140 mm
Width:	63 mm
Span:	85 mm
Height:	69 mm
Parallelism:	3 µm / 100 mm
Perpendicularity:	4 µm / 100 mm
Order-no.:	**101-202-020**

Sine angle vise SA-100

▸ Made out of high-qual. alloy steel, hardened and grinded
▸ Angle adjustment via gauge blocks
▸ Clamping system at the lower part allows a secure angle adjustment

Length:	130 mm
Width:	73 mm
Span:	45 mm
Height:	93 mm
Swivel adjustment:	45°
Parallelism:	3 µm / 100 mm
Perpendicularity:	5 µm / 100 mm
Order-no.:	**101-202-010**

MK-CMS Edition - The intuitive software suite made by optacom.

Measurement:

- Contour
- Contour top/down
- Start CNC Control
- Select a CNC program
- Manage sensing arms
- Manage CNC programs

Evaluation:

- A-Axis
- B-Axis
- Find Regression lines / Regression circles
- Element intersections
- Free intersections
- Constructed intersections
- Dimensioning from Point to Point
- Dimensioning parallel to a line
- Dimensioning perpendicular to a line
- Acute angle dimensioning
- Obtuse angle dimensioning
- Straightness
- Parallelism
- Perpendicularity
- Angularity
- Circle opening angle
- Tolerance

Toolbox:

- Multi-part lines / circles
- Auxiliary circles through multiple points
- Auxiliary circles with intersection and radius
- Auxiliary circles based off a circle
- Reference sphere
- Create angle bisection
- Auxiliary line through multiple points
- Auxiliary line by point and angle
- Auxiliary line by point with angle to a line
- Auxiliary line through point perpendicular to a line
- Auxiliary line through point parallel to a line
- Auxiliary line with distance parallel to a line
- Auxiliary line based on tangents

Extras:

- Over-stretch Element
- Extrema on Contour
- Extrema on Element
- Comment
- Caption
- Twist
- Move
- Flip horizontally
- Flip vertically

DXF comparer:

- Import measurement
- Change visibility through Contour
- Change visibility through Foils
- Tolerance borders
- Tolerance border legend
- Ignore areas
- Contour placement
- Element placement
- Adjust element placement
- Contour deviation
- Mark (deviation at position)

Reference Methods:

- Macro
- Execute reference run from hard drive
- Execute reference run from database
- Load measurement from database
- Save measurement to database
- Database management
- Database configuration

Import/Export

- DXF Import
- CSV Import
- DXF Export
- CSV Export
- SCR Export

Software-Options

	MK-Softw.-Basic	MK-Software-OP1	MK-Software-OP2	MK-Software-OP3	MK-Software-OP4	MK-Software-OP5	MK-Software-OP6	MK-Software-OP7	MK-Software-OP8
Measurements									
Contour Opens Dialogue „Start Measurement"	✔								
Contour Top/Down Opens Dialogue „Start Measurement", Supporting Top-Down Measurement						✔			
Start CNC Control Opens CNC Control			✔						
Select CNC Program Opens Selection of CNC Programs			✔						
Manage List of Stylus Tips Opens List of Stylus Tips	✔								
Manage List of CNC Programs Opens List of CNC Programs			✔						
Evaluations									
A Axis Double Click Creates an A and a B Axis on a Contour or an Element	✔								
B Axis Double Click Creates a B Axis (if not yet present) on a Contour or an Element	✔								
Find Regression Lines Double Click Creates a B Axis (if not yet present) on a Contour or an Element	✔								
Find Regression Circles Double Click Initiates Search within the Contour Section, for a Segment not Exceeding Abort Criterion	✔								
Element Intersection Points									
Between Elements Creates Intersection Points between two Elements	✔								
Between Element and Contour Creates Intersection Points between Element and Contour	✔								
Free Intersection Points									
Related to Contour Creates Intersection Points at Selectable Position of Contour	✔								
At Coordinates Creates Intersection Points at Selectable Coordinates	✔								
Intersection Points at Contour	✔								
Subdivision of Segment Creates Intersection Points between two Points in Specified Relation	✔								
Dimensioning Point to Point Creates Linear Dimensioning between two Intersection Points, or between an Intersection Point and a Line	✔								
Dimensioning in Parallel to a Line Creates Linear Dimensioning between two Intersection Points, in Parallel to a Regression/Auxiliary Line	✔								
Perpendicularly to a Line Creates Linear Dimensioning between two Intersection Points, Perpendicularly to a Regression/Auxiliary Line	✔								
Dimensioning Acute Angle Creates Angle Dimensioning between Elements, up to 180°	✔								
Dimensioning Obtuse Angle Creates Angle Dimensioning between Elements, up from 180°	✔								
Opening Angle per Angle Opening Angle of Circle Element is Created by Selection of an Element and a Circle Element	✔								
Opening Angle per Distance Specifies Start and End Point of a Selected Regression Circle to a Distance of Central Point		✔							
Opening Angle per Intersection Points Selection of an Auxiliary Line and a Circle Element Limits the Opening Angle of the Circle Element by the Auxiliary Line		✔							
Tolerance Enables Tolerances to be Added to Dimensioning		✔							

Software-Options

	MK-Softw.-Basic	MK-Software-OP1	MK-Software-OP2	MK-Software-OP3	MK-Software-OP4	MK-Software-OP5	MK-Software-OP6	MK-Software-OP7	MK-Software-OP8
Auxiliary Functions									
Complex Lines Several Lines may be Combined to a Complex Line, which may Act as a Reference	✔								
Complex Circles Several Circles may be Combined to a Complex Circle, which may Act as a Reference	✔								
Auxiliary Circle Across Several Points Creates an Auxiliary Circle on the Basis of Several Selected Intersection Points	✔								
Auxiliary Circle with Intersection Point and Radius Creates an Auxiliary Circle. The Selected Intersection Point is Used as Central Point.	✔								
Auxiliary Circle Related to a Circle Creates an Auxiliary Circle Related to an Available Circle Element	✔								
Reference Sphere Drops a Reference Sphere with Diameter to be Specified, from a Selectable Position onto Contour	✔								
Creates Median Line Creates Median Line between two Regression or Auxiliary Lines	✔								
Auxiliary Line across Several Points Creates Auxiliary Line across Several Specified Intersection Points	✔								
Auxiliary Line through Points and Angles Creates Auxiliary Line through an Intersection Point in Selectable Angle	✔								
Auxiliary Line through a Point, in a Specified Angle to a Line Creates Auxiliary Line Across an Intersection Point and a Line, in Selectable Angle	✔								
Auxiliary Line through a Point, Perpendicularly to a Line Creates Auxiliary Line through an Intersection Point, Perpendicularly to a Regression or Auxiliary Line	✔								
Auxiliary Line through a Point in Parallel to a Line Creates Auxiliary Line through an Intersection Point, in Parallel to a Regression or Auxiliary Line	✔								
Auxiliary Line with Distance in Parallel to a Line Creates Auxiliary Line in Parallel to a Regression or Auxiliary Line	✔								
Extra Features									
Overstretch Element Overstretches the Specified Element by a Selectable Factor with Respect to itself				✔					
Extreme Points on Contour Determines Maximum Point on a Selectable Position of Contour	✔								
Comment Enables Comment to be Inserted in a Selectable Position	✔								
Legend Enables Dimensioning to be Completed by Prefix or Suffix		✔							
Manipulations									
Rotate Rotates the Contour, Including all Elements and Dimensioning	✔								
Mirror Horizontally Mirrors the Contour around Vertical Axis, Including all Elements and Dimensioning	✔								
Mirror Vertically Mirrors the Contour around Horizontal Axis, Including all Elements and Dimensioning	✔								

Software-Options

	MK-Softw.-Basic	MK-Software-OP1	MK-Software-OP2	MK-Software-OP3	MK-Software-OP4	MK-Software-OP5	MK-Software-OP6	MK-Software-OP7	MK-Software-OP8
Comparison of Foils									
Import Measurement Enables a Measurement to be Loaded for Comparison of Foils				✔					
Change Visibility Across Contour Switches Visibility of Measured Contour On or Off				✔					
Change Visibility Across Foils Switches Visibility of Imported Measurement On or Off				✔					
Ranges of Tolerance Creates Range of Tolerance and Intervention with Specified Values				✔					
Legend for Tolerance Range Creates Legend for Tolerance Ranges				✔					
Ignore Range Ranges not to be Taken into Consideration during Subsequent Calculations				✔					
Placing of Contour Places a Foil onto a Contour				✔					
Placing of Element Places a Foil onto a Contour, on the Basis of Specified Elements				✔					
Adjust Placing of Element Enables Placing of Element to be Adjusted Afterwards				✔					
Deviation of Contour Calculates and Displays Deviations between Contours				✔					
Marking (Deviation at Position) Marks Deviations at the Selected Position				✔					
Form and Position									
Straightness Calculates Straightness to a Regression Line								✔	
Shape of Line Calculates Shape of Line to a Regression Element								✔	
Parallelism Parallelism is Determined after Selection of two Lines								✔	
Rectangularity Rectangularity is Determined after Selection of two Lines								✔	
Angularity Angle is Determined after Selection of two Lines								✔	
Reference Functions									
Perform Reference Run from Hard Disk Initiates Reference Run for Current Measurement, on the Basis of Measurement from Hard Disk		✔							
Perform Reference Run on the Basis of CNC Commands for Measurement Initiates Reference Run for Current Measurement, on the Basis of Reference Commands Stored in CNC		✔	✔						
Initiate Reference Run from Database Initiates Reference Run for all Measurements on the Basis of Measurement from Database		✔							
Load Measurement from Database Loads Measurement from Database		✔							
Save Measurement in Database Saves Measurement in Database		✔							
Manage Database Starts User Interface for Management of Database		✔							
Configure Database Management Starts Configuration Procedure for Displayed Reference Information		✔							
Setup									
Reference Information Selection of Reference Information for Measurement		✔		✔					

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Software-Options

	MK-Softw.-Basic	MK-Software-OP1	MK-Software-OP2	MK-Software-OP3	MK-Software-OP4	MK-Software-OP5	MK-Software-OP6	MK-Software-OP7	MK-Software-OP8
Import/Export (Point Clouds)									
DXF Import Enables Elements to be Imported from a DXF File				✔					✔
CSV Import Enables Elements to be Imported from a CSV File									✔
DXF Export Enables Measuring Points to be Exported as DXF File									✔
CSV Export Enables Measuring Points to be Exported as CSV File									✔
SCR Export Enables Measuring Points to be Exported as SCR File									✔
Measurement Features									
Search for Extreme Value in Y									
Physical Automatic Search of Highest/Lowest Point in Y	✔								
Manual Manual Search of Highest/Lowest Point in Y	✔								
Measuring Direction Upward/Downward Selection of Measuring Direction (Upward Only with Top/Down)						✔			
Select Measuring Speed Selection of Measuring Speed	✔								
Constant Speed Measurement is Performed at Constant Speed	✔								
Selection of Reference Object									
From Hard Disk Reference Object may be Selected from Hard Disk		✔							
From Database Reference Object may be Selected from Database		✔							
Determine Behaviour of Immersion Determines Behaviour of Machine at Borings etc.	✔								
Select Measuring Path Determines Path Length to be Measured	✔								
Start Measurement									
Measurement of Single Part Measurement of Single Contour	✔								
Combined Measurement Measurement of Several Contours							✔		
Details of Measurement									
Profiles Of Presentation									
Tolerance Overview and Setup of Tolerances		✔							
Reference Information Overview of Current Reference Information	✔								
Export Profiles									
CSV Export of Measuring Results as CSV File					✔				
QDAS Export of Measuring Results in QDAS Format					✔				
Details of Measurement Setup Details of Loaded Measurement		✔							

Software-Options

Software-Options	MK-Softw.-Basic	MK-Software-OP1	MK-Software-OP2	MK-Software-OP3	MK-Software-OP4	MK-Software-OP5	MK-Software-OP6	MK-Software-OP7	MK-Software-OP8
Print									
High Speed Printing Initiates Print of Selected High Speed Print Report without Preview	✔								
Presentation Maximum Number of Decimal Places	4								
Circle Dimensioning									
Radius Indicates Circle Dimensioning as Radius	✔								
Diameter Indicates Circle Dimensioning as Diameter	✔								
Dimensioning at Angle									
Decimal Shows Angle Dimensioning as Decimal Value	✔								
Sexagesimal with Degree Shows Angle Dimensioning in Degree	✔								
Sexagesimal with Degree, Minute Shows Angle Dimensioning in Degree and Minute	✔								
Sexagesimal with Degree, Minute, Second Shows Angle Dimensioning in Degree, Minute and Second	✔								
Use Inch as Unit Shows Dimensioning in Inch instead of mm	✔								
Visualization of Dimensioning									
Display Center Line Displays Center Line within Evaluation Window	✔								
Contour Tracking Tracks Measured Contour Automatically	✔								
Use Mouse Position for Zoom Use Mouse Position as Zooming Position	✔								
Further Points									
Button Profiles Enables Specific Functions to be Added or Removed							✔		
User Management Enables Configuration of Several Users with Different Access Rights							✔		
Selection of Languages Selection of more than 10 Languages	✔								
QDAS-Export					✔				
Top-Down						✔			

Software options

MK-Softw.OP1: Reference Functions

Order-no.:	MK-Software-OP1

MK-Softw.-OP2: CNC Modul

Order-no.:	MK-Software-OP2

MK-Softw.-OP3: Foil Comparison

Order-no.:	MK-Software-OP3

MK-Softw.-OP4: Exportfunction

Order-no.:	MK-Software-OP4

MK-Softw.-OP5: Top-Down

Order-no.:	MK-Software-OP5

MK-Softw.-OP6: User Management

Order-no.:	MK-Software-OP6

MK-Softw.-OP7: Form and Position

Order-no.:	MK-Software-OP7

MK-Softw.-OP8: Import / Export

Order-no.:	MK-Software-OP8
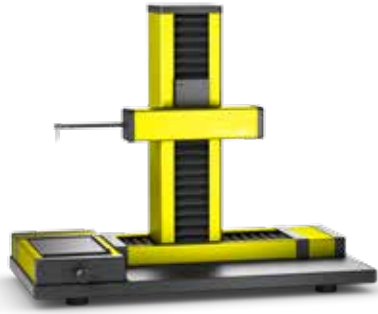
Contour King
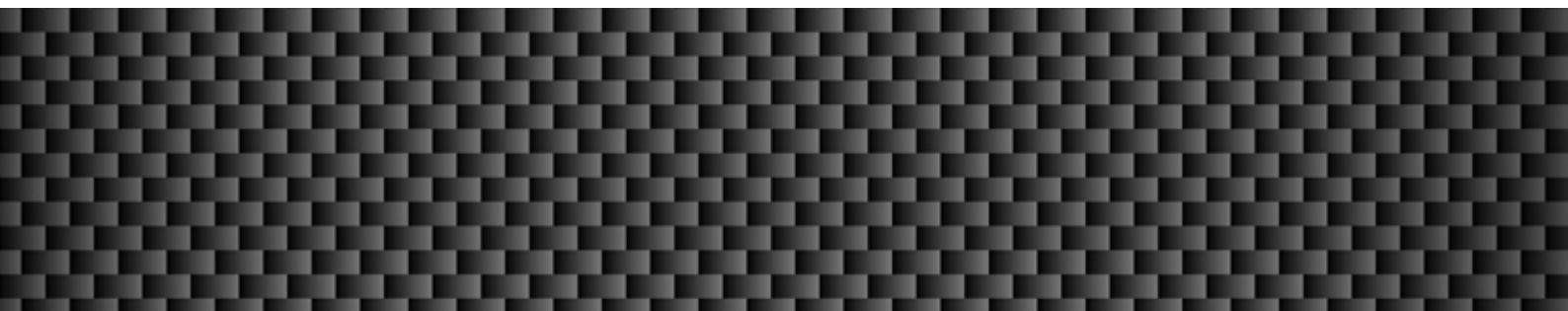powered by optacom
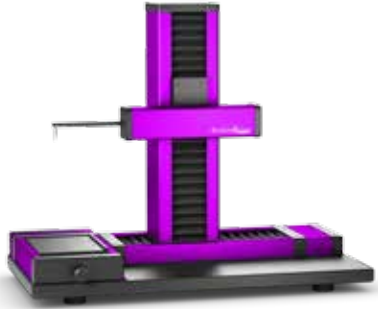
Contour Queen
powered by optacom

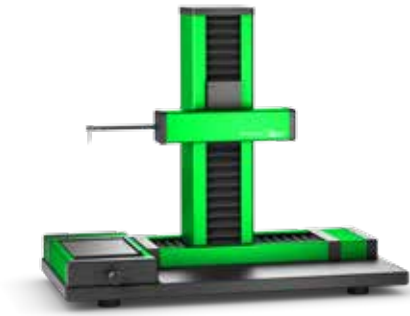**Contour Samurai**
powered by optacom

Contour Pirate
powered by optacom

Colors for the modern measuring room
If black and white is too boring for you, get your MK-CMS-2.x machine in 7 different colors and labels, it´s all up to you.

Contour Viper powered by optacom

Contour Racer powered by optacom
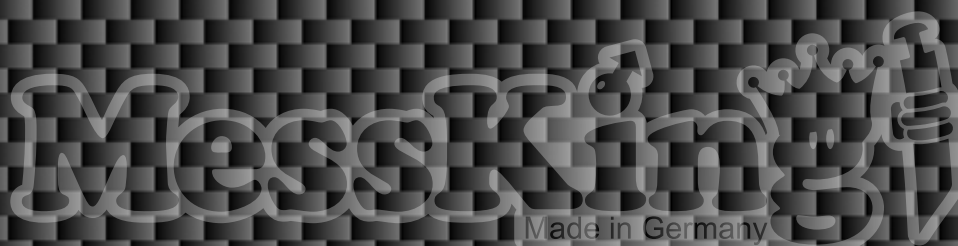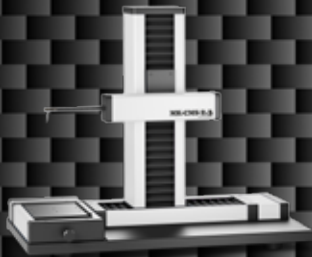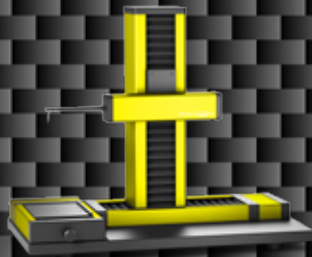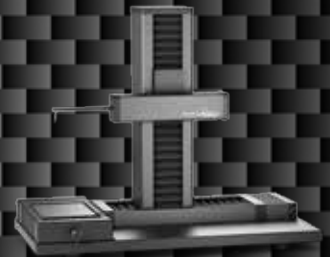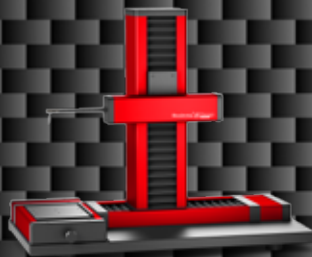

Contour Titan powered by optacom

excl. EUR 500.00 color surcharge

MK-CMS-2.x powered by optacom

Colors for the modern measuring room
If black and white is too boring for you, get your MK-CMS-2.x machine in 7 different colors and labels, it´s all up to you.

MessKing
Made in Germany

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MK-CMS-2.X
powered by optacom

Contour King
powered by optacom

Contour Titan
powered by optacom

Contour Racer
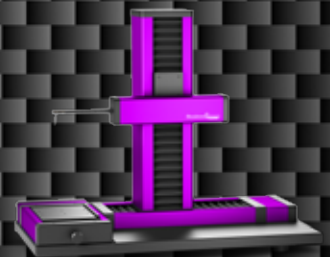powered by optacom

CHOOSE YOUR COLOR
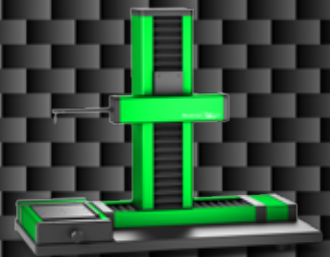
Contour Viper
powered by optacom
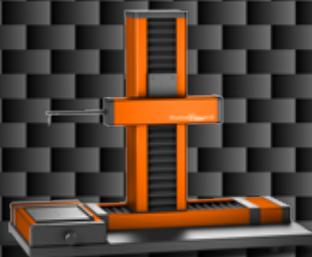
Contour Samurai
powered by optacom

Contour Pirate
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