

## Product Guide



We make it visible.



Carl Zeiss Industrial Measuring Technology – you’ve heard the name for years. But do you know who we are? Quality management requirements have changed radically during the last few years. Process control at the production level is a requirement for more and more small and midsize firms. This is a challenge for all of us – and we can help you meet the challenge with measuring technology from Carl Zeiss. Our products and services meet your daily demands.

With us, you simply measure.



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# ScanMax®



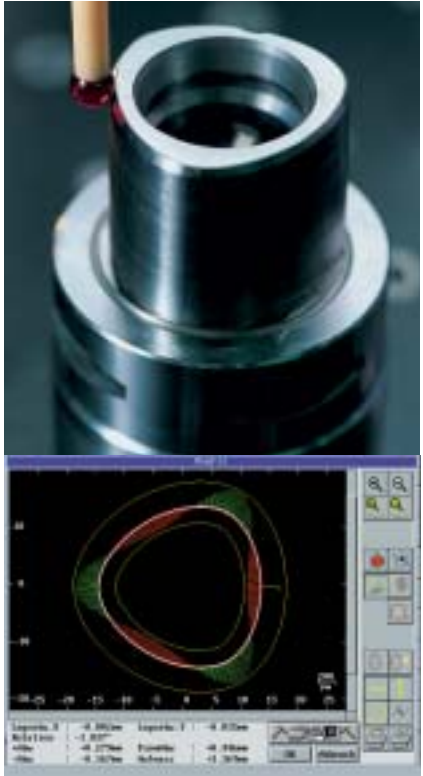
The intelligent gage for the shopfloor and pre-production. With ScanMax®, Carl Zeiss takes manual scanning directly to the shopfloor. The universal 3D probe permits complete capture of the workpiece surface by means of multi-point measurement. Dimension, form and position are measured very quickly in one process next to the machine tool.

## Application

Design models, standard geometries, gears, statistical evaluations in volume production – there is no limit to the applications of ScanMax®. ScanMax® replaces flexible gages and fixtures. Combined with HOLOS and DIMENSION, ScanMax® can be used directly in reverse engineering.

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [µm] *
ScanMax®	850x400x450	$MPE_E=5.0+L/50$

\* L = measured length in mm



**Application**

Design models, milled or turned standard geometries and gears. No matter what you want to measure, there are no limits to what ScanMax® can do.

# Vista



The low-cost, compact CMM for small measuring volumes. With the benefits of Carl Zeiss CNC technology for faster and more accurate measurement.

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
Vista CNC	400x500x350	$\text{MPE}_E=2.4+L/300$	max. 280

\* L = measured length in mm

# SPECTRUM



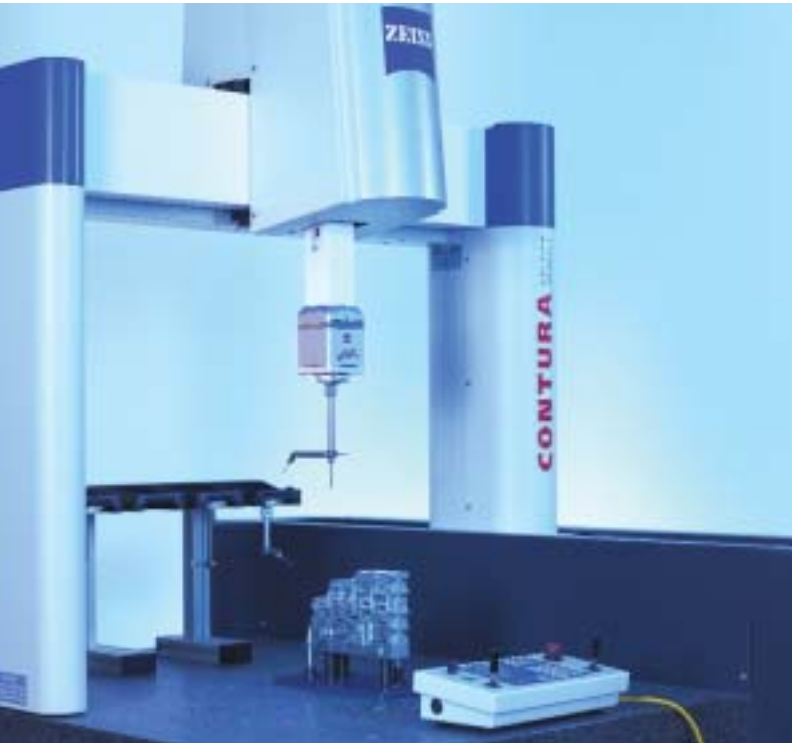
By integrating the RDS articulating sensor holder, SPECTRUM can be equipped with a wide range of different sensor systems such as RST-P, ViScan and DTS from Zeiss, and with Renishaw sensors.

Eight different sizes are available – from 700/700/600 mm to 1000/2100/600 mm. Z-axis clearance is increased with the U-STONE models. The bridge is raised 200 mm, which moves your measuring range off the table. Clearance changes from 730 mm to 930 mm. The effective measuring range increases to a full 780 mm (with the use of a probe change magazine and specific probe combinations).

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
<b>SPECTRUM 700</b>	700x700–1000x580	$\text{MPE}_E=2.2+L/300$	max. 560–730
<b>SPECTRUM 1000</b>	1000x1000–2100x580	$\text{MPE}_E=2.8+L/300$	max. 925–1814

\* L = measured length in mm with ST probe system

# CONTURA



Contura sets new standards for value and performance. Contura makes high-speed scanning and high data density available to small and mid-sized manufacturers. With its dynamic single-point probing technology, DT, the DynaTouch sensor system is your ideal start into coordinate metrology. With the VAST XT scanning probe, evaluate the size, form and position of a feature in one setup. Configure detailed stylus combinations.

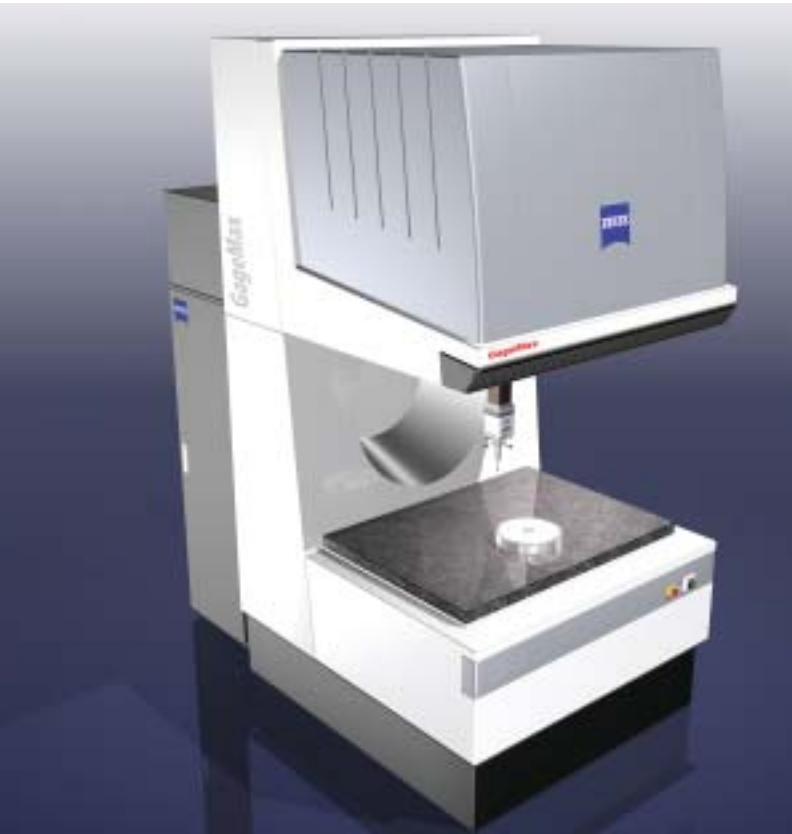


The solution for manufacturers looking for an affordable, user-friendly solution with the Zeiss active scanning system.

	Measuring range X x Y x Z [mm]	Length- measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
CONTURA 7/7/6	700x700x600	$\text{MPE}_E=2.5+L/250$	560
CONTURA 7/7/6 Select		$\text{MPE}_E=2.0+L/300$	
CONTURA 7/10/6	700x1000x600	$\text{MPE}_E=2.5+L/250$	730
CONTURA 7/10/6 Select		$\text{MPE}_E=2.0+L/300$	
CONTURA 10/12/6	1000x1200x600	$\text{MPE}_E=2.7+L/250$	1150
CONTURA 10/12/6 Select		$\text{MPE}_E=2.2+L/300$	
CONTURA 10/16/6	1000x1600x600	$\text{MPE}_E=2.7+L/250$	1500
CONTURA 10/16/6 Select		$\text{MPE}_E=2.2+L/300$	

\* L = measured length in mm

# GageMax



The reliability of a coordinate measuring machine is a very important if you want to measure right in the middle of production. Losses in accuracy and speed are unacceptable. We have designed GageMax's loading capacity and overall dimensions to match those of the machining centers to ensure that it can be smoothly integrated into your production environment or shop-floor. GageMax can be loaded and operated from three sides and therefore coordinated with any environment. Thanks to its innovative design, GageMax operation remains reliable and accurate even in temperatures above 35 °C. The TVA accuracy specifications allow you to precisely determine GageMax's accuracy for any temperature.

Fixed doghouse gauges no longer meet the requirements of the innovative cutting and reshaping industry. With GageMax, you can measure your entire component spectrum using just one machine.

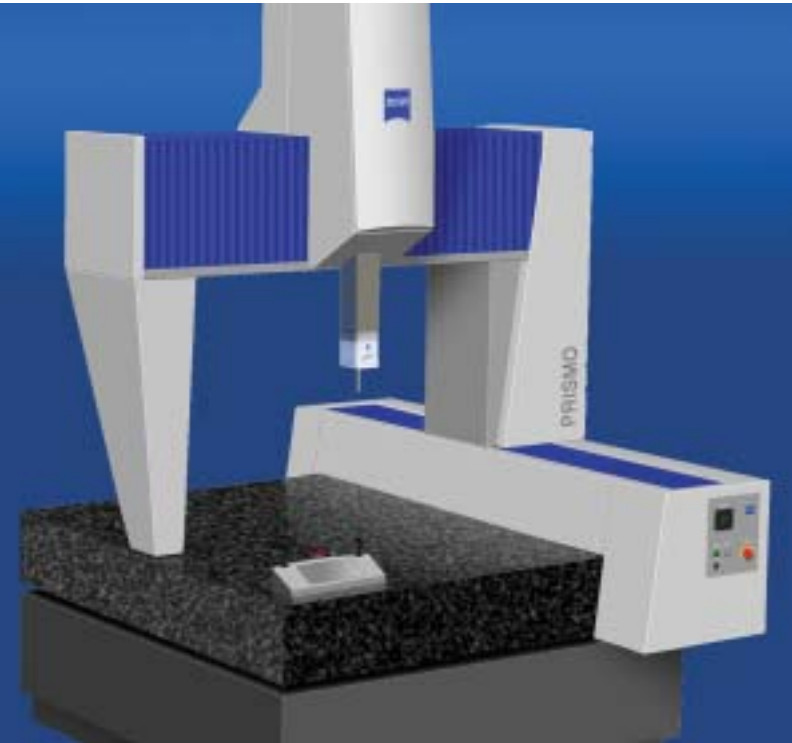
GageMax is available with the VAST XT probe system. Today, scanning is an absolute must for any measuring machine and for a detailed production cost analysis. GageMax streamlines your production measuring tasks. Life cycle costs, area costs and much faster adaptation shorten the payback period of your investment as compared to conventional solutions.

Case 1: Metrology room	20 °C	$MPE_E = 2.2 + L/300$
Case 2: Modern production	28 °C	$MPE_E = 2.6 + L/260$
Case 3: Conventional production	35 °C	$MPE_E = 3.0 + L/225$

	<b>Meas. range</b> <b>X x Y x Z</b> <b>[mm]</b>	<b>Probing error</b> <b>MPE E</b> <b>[µm] *</b>
<b>GageMax</b>	700x500x500	$2.2+0.05\Delta t+L/(300-5*\Delta t)$

\* with L = measured length in mm and standard configuration  
Other versions on request

# PRISMO



The PRISMO series is a benchmark in industrial metrology worldwide. The metal cutting industry has been relying on proven Zeiss technology for years. With PRISMO you benefit from a design developed for the most diversified target groups and fields of application. PRISMO is the most frequently used measuring machine in the powertrain area.

## **PRISMO Access**

The perfect model for metrology rooms. It opens the door to PRISMO technology and creates trust for you and your customers.

## **PRISMO Vario**

The multi-sensor system of PRISMO Vario enables contacting and optical measurement on just one machine. The Zeiss VAST scanning technology with its RDS articulating sensor holder provides the optimum solution to any measuring application.



### **PRISMO HTG**

The benchmark for in-process measurement. PRISMO HTG is the thermally stable and shop-hardened solution for the production environment. An optional manual or automatic workpiece loading system can be integrated.

### **PRISMO S-ACC**

The highly accurate coordinate measuring machine for reference measurements in the metrology lab. The ideal machine for minute tolerances and high-precision components.

# PRISMO

## Sensor System



### **DT**

Single point measurement for the ideal start into coordinate metrology. One sensor for dimension and position. It is an efficient and reliable thanks to floating mean values and an active measuring force.

### **VAST XT//VAST Gold**

VAST XT the entry into active Zeiss scanning technology. Active Zeiss scanning technology allows you to measure form elements such as roundness or straightness with high speed, accuracy and repeatability in one single measuring run. The Zeiss VAST scanning sensor system provides you with a tool for solving complex measuring tasks.

### **RDS**

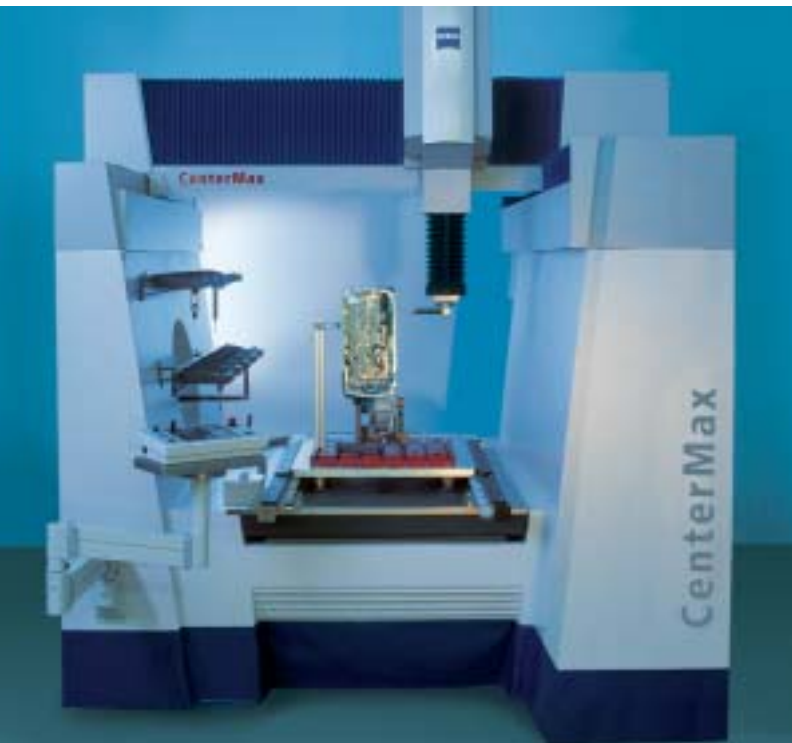
Zeiss RDS can reach all spatial angles with an extremely high number of positions. Increments of only  $2.5^\circ$  make probing in deep and inclined bores without any shaft contact child's play. Zeiss RDS permits the integration of a wide range of optical and contacting sensors.

	<b>Measuring range X x Y x Z [mm]</b>	<b>Probing error MPE E [μm] *</b>
<b>PRISMO Access</b>	700x 900x700	1.7+L/300
	900x1200–1800x 700–900	1.7+L/300 –1.9+L/300
	1200x1800–2400x1000	2.9+L/250
	1600x2400–3000x1400	3.5+L/250
<b>PRISMO Vario</b>	700x 900x700	1.7+L/300
	900x1200–2400x 700	1.7+L/300
	1200x1800–4200x1000	2.9+L/250
	1600x2400–3000x1000	3.5+L/250
<b>PRISMO HTG</b>	700x 900x500	1.4+L/330
	900x1200–2400x 700	1.4+L/330
	1200x1800–4200x1000	2.0+L/300
	1600x2400–3000x1000	3.2+L/250
<b>PRISMO S-ACC</b>	700x 900x500	1.0+L/350
	900x1200–2400x 700	1.0+L/350 –1.4+L/350
	1200x1800–4200x1000	1.7+L/350 –1.9+L/350
	1600x2400–3000x1000	2.9+L/300

\* with L = measured length in mm and standard configuration

Other versions on request

# CenterMax

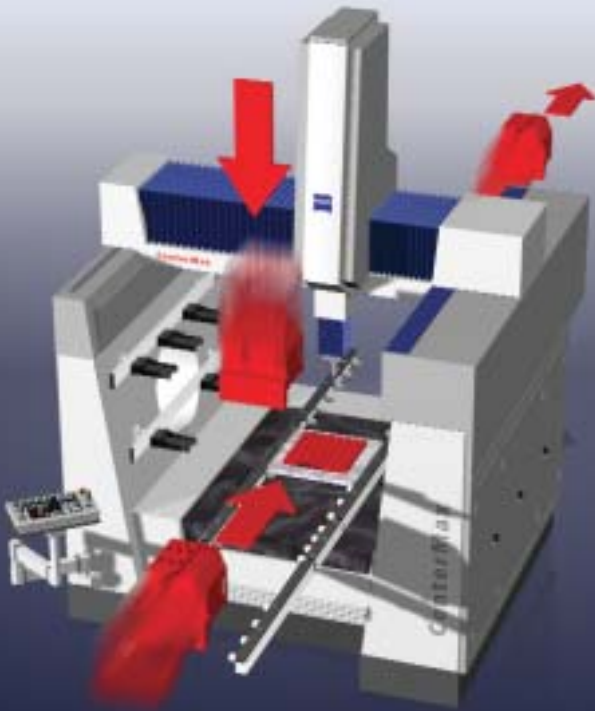


Universal coordinate measuring machine with third-generation scanning. The VAST Gold sensor, the Calypso Navigator software and the "Scanning Engine" controller are the three components of this outstanding scanning method. CenterMax fits neatly into any production line. Any dynamic influences exerted by the production environment on the workpiece are compensated for by the active anti-vibration system.

Dynamic and thermal damping are guaranteed by TRF (Temperature Resistant Frame). The combination of mineral cast and Invar rods gives CenterMax its superb stability.

## **Application**

For efficient measurement both on the shop-floor and in the metrology room. The system is equipped with a variable workpiece base and can therefore be equipped with a granite plate or a universal plate for the guideway system and a rotary table without limiting the measuring volume.



### TVA (Temperature Variable Accuracy)

Carl Zeiss is the first manufacturer to define the innovative accuracy specification. From now on, you will know exactly just how accurately your machine operates. Even better: you can define the accuracy of CenterMax depending on whether you install it on the shop-floor or in the metrology room.

#### Example

Case 1: Metrology room	20 °C	$MPE_E = 1.6 \mu\text{m} + L/300$
Case 2: Modern production	28 °C	$MPE_E = 2.0 \mu\text{m} + L/244$
Case 3: Conventional production	35 °C	$MPE_E = 2.35 \mu\text{m} + L/195$

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
CenterMax	900x1200x700	$MPE_E = 1.6 + L/300$	1000

\* L = measured length in mm

# MMZ



CNC-controlled bridge-type CMM of steel construction with universal 3D high-speed scanning probe for high-speed scanning, and static data acquisition.

## Application

For cost-effective process monitoring of large parts and appliances demanding high standards of accuracy and universal application.

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
MMZ	X 1600, 2000 Y 2400, 3000	from $\text{MPE}_E=4.5+L/250$	from 2500
MMZ-S-ACC	Z 1200, 1600	from $\text{MPE}_E=3.0+L/300$	
MMZ-G	X 2000, 2500, 3000 Y 3000 ... 6000	from $\text{MPE}_E=5.0+L/200$	depending on foundation
S-ACC	Z 2000	from $\text{MPE}_E=3.5+L/200$	up to 50,000

\* with L = measured length in mm and standard configuration

Other versions on request

# UPMC CARAT



CNC-controlled precision measuring machines with high-speed scanning probe. Thermal insulation and thermally stable ZERODUR scales for wide temperature tolerance. UPMC CARAT with centrally driven bridge and bending compensation of table plate for maximum precision.

## Application

Precision measurements in the complete spectrum of 3D metrology for prototype and sample parts and for measuring 2D and 3D curves. UPMC CARAT is particularly suited for utmost-precision measurements in research, development and quality assurance, and for calibrating gages and artifacts.

	Measuring range X x Y x Z [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
UPMC 850 S-ACC	850x1200x600	$\text{MPE}_E=0.7+L/600$	max. 1500
UPMC 1200 S-ACC	1150x1500x1000	$\text{MPE}_E=1.4+L/400$	max. 2000

\* L = measured length in mm

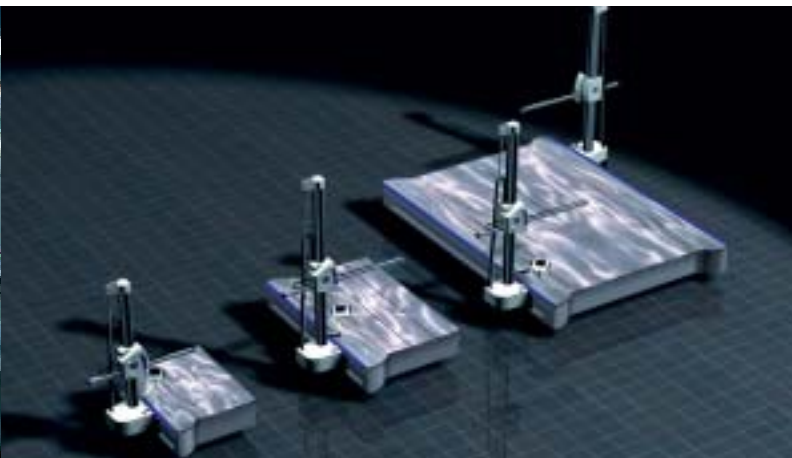
# Carmet



Compact, small footprint, High-end technology. Carmet is available in four sizes, the largest also in a dual-arm version. Optionally, as a motorized or CNC unit. New X-guideways with hardened profile guide rails and roller ball bearings. Shop-hardened length-measuring system resistant to cleaning agents, dust and contamination. The optimized measuring plate design ensures extremely short installation times and at the same time provides easy access to the workpieces. The control panel and computer are built into a stand, and are always near the operator during measurement.

## **Application**

With Carmet, Carl Zeiss offers the standard for all requirements and jobs in model and mold making, foundries, wood and sheet-metal processing.



	Measuring range [mm] **	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
<b>Carmet 20/12/15</b>	X 2000 Y 1200 Z 1500	$MPE_{\xi}=25+L/50 \leq 70$	1000
<b>Carmet 30/16/21</b>	X 3000 Y 1600 Z 2100	$MPE_{\xi}=30+L/50 \leq 80$	1500
<b>Carmet 50/26/21</b>	X 5000 Y 2586 Z 2100	$MPE_{\xi}=30+L/50 \leq 80$	5000
<b>Carmet 62/26/21</b>	X 6200 Y 2586 Z 2100	$MPE_{\xi}=30+L/50 \leq 80$	6000

\* L = measured length in mm    \*\* other measuring ranges on request

# SMC



High-speed, CNC horizontal-arm CMM available in a single-arm and dual-arm version. 5-axis machine with continuous articulating sensor holder, RST touch trigger probe or EagleEye optical measuring system. Bench-top (single-arm) or flush-floor (dual-arm) configuration.

## **Application**

For measuring single parts, components and car-bodies in the car industry, and other large-volume parts in the aircraft industry and tool making.



Non-contacting measurement with EagleEye



Automatic sensor changing magazine

	Measuring range [mm]	Length-measuring uncertainty [ $\mu\text{m}$ ] *	Workpiece weight [kg]
<b>SMC Bench top</b>	X 3000, 4200 Y 1350 Z 2000, 2400	$MPE_E=25+L/100 \leq 60$	max. 1500
<b>SMC Bar version</b>	X 2400, 4200, 6000, 7000, 9000 Y 2x1350 Z 2000, 2400	$MPE_E=25+L/100 \leq 60$	max. 2000

\* L = measured length in mm

Enhanced accuracy option or extended temperature range option on request

# PRO



PRO sets new standards in productivity. Optimal productivity means that your measuring machine must be fast and accurate at the same time. With PRO you measure up to three times faster and also three times more accurately. PRO comes standard with the RDS sensor carrier. Optionally, it can be equipped with the DSE articulating probe holder, allowing you to adapt PRO to all your applications.



	Measuring range [mm]	Length measuring uncertainty [ $\mu\text{m}$ ]
<b>PRO Compact</b>	X 5000 – 10000 Y 1600 Z 2100 – 2500	$\text{MPE}_E = 30 + L/70 \leq 80$
<b>PRO Select</b>	X 5000 – 10000 Y 1600 Z 2100 – 2500	$\text{MPE}_E = 25 + L/100 \leq 60$
<b>High accuracy option</b>		$\text{MPE}_E = 18 + L/125 \leq 50$

# Surface Testers



## **Handysurf**

Portable, hand-held surface tester for fast testing of surface roughness directly in the production environment and workshop. Simple operation, flexible application with immediate data evaluation and display.

## **Surfcom 130, 480, 1400, 1800, 2800 and 3000**

Surface testers with high linear accuracy, automatic calibration, easy stylus change and comprehensive evaluation software. Surfcom 130 for in-process application. Surfcom 480 with large adjustment and displacement ranges.

Surfcom 1400 the highly accurate roughness tester with powerful, easy-to-operate measuring and analyzing software under Windows. Surfcom 1800 universal roughness and contour tester. Surfcom 3000 integrated, ultra-precise roughness and contour tester with laser interferometer measuring system.



# Form- and Contour Measuring Instruments



## **Rondcom 31, 41, 47, 55, 60, 75**

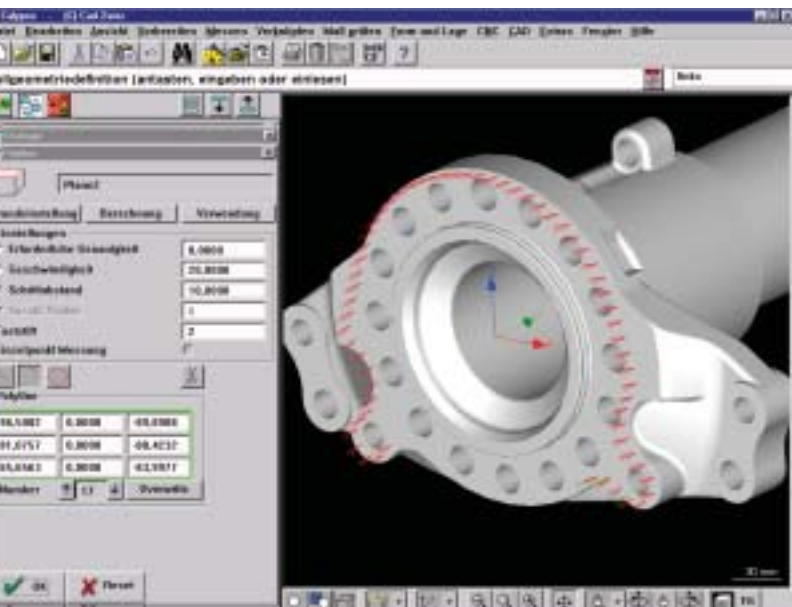
Benchtop units: Rondcom 31 for precision roundness measurement, Rondcom 41 and Rondcom 47 for high and ultra-high-precision form measurement with vertical straightness verification and Rondcom 60 for ultra-precise form measurement with CNC functions. All Rondcom bench-top units feature a precision rotary table on air bearings and easy operation through graphics user interfaces under Windows.

Rondcom 75 is available for high-precision form measurement of large-volume, heavy workpieces.

## **Contourecord 1600, 2600**

Flexible instruments for contour measurement and analysis of a wide work-piece spectrum. Automatic measurement. Easy operation through graphics user interfaces under Windows NT. Fast data processing with printer output in different layouts.

# Calypso



Calypso is the object-optimized measurement software for Windows systems and has a direct interface for standard CAD formats. This means that 3D models are transferred from your design department directly to your measuring program.

The high-end interface minimizes transfer errors and handles standard data formats.

With Calypso you work with the industrial standards that are also used by your customers.

Calypso includes the automatic generation of measuring strategies and automatically recognizes geometric elements; it generates probing routes and points.

Directional moves, travel paths between the features and evaluations on the basis of general tolerances are also performed automatically in Calypso. Calypso Navigator is the leading scanning software in the powertrain area.

# Calypso Options

## **FACS**

FACS (Flexible Automation and Control System) for integrating your measuring system in automated CIM environments. Different metrology applications can be combined in a uniform user interface by means of FACS. FACS is the ideal solution if you want to perform random sampling of different workpieces near the production line.

## **OVCMM**

OVCMM (virtual coordinate measuring machines) is integrated into Calypso and can therefore automatically compute the feature-oriented measuring uncertainty directly after the measurement. In this way, the quality of measured data can be evaluated and documented.

## **Calypso Planner**

Off-line programming and graphic simulation of the measuring run using Calypso Planner enhance the available capacity of your coordinate measuring machine. The Characteristic Input option offers the possibility of transferring dimensional and tolerance information directly from the CAD data. The time required to create a measuring program may be reduced by up to 50%, depending on the part spectrum.

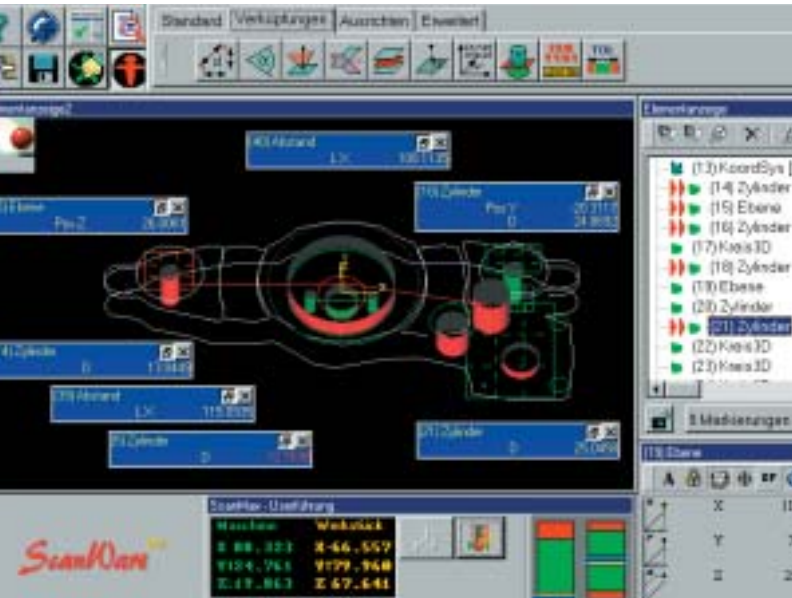
## **BLADE**

The evaluation software for assessing the quality of turbine blades. Many blade parameters such as form deviations of the blade profile, maximum blade thickness and blade length, can be determined very easily using BLADE.

## **Gear Pro**

The gear measuring software based on state-of-the-art technologies. Data is evaluated on the basis of an analytical, three-dimensional gear model. User-friendly input dialogs provide systematic prompting and graphic support through the individual steps of the measuring run.

# ScanWare<sup>Pro</sup>



The intelligence for measuring applications with your ScanMax. ScanWare<sup>Pro</sup> offers professional functionality in Windows. New functions and an interactive assistant help the operator measure more effectively.

These assistants help you to align components and to utilize CAD interfaces with HOLOS or DIMENSION.

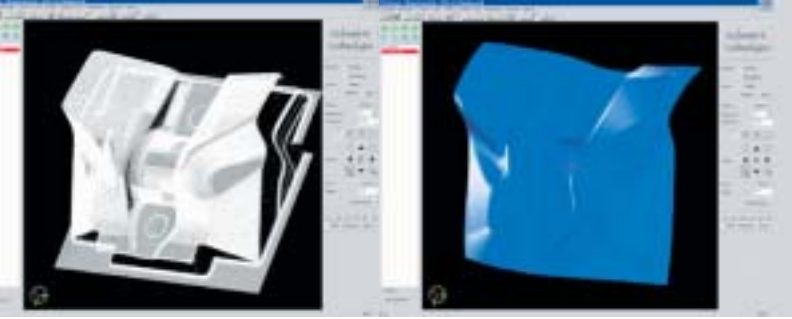
# HOLOS



Universal measuring program for the measurement or digitization of free-form surfaces and standard geometries. HOLOS imports all CAD data for surface models and standard geometries directly from the design. Measuring programs are generated quickly and easily by clicking on the measuring and reference points in the graphic workpiece illustration.

HOLOS can also be used for copy milling. One model half is scanned, the other half milled symmetrically. Another option is manual single-point measurement. Measured data is displayed automatically in the graphic illustration and stored as measuring program.

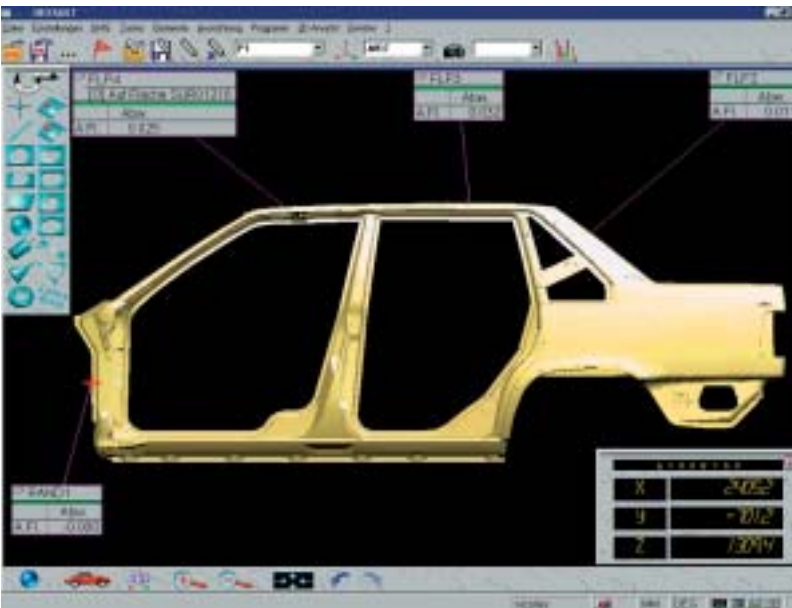
# DIMENSION



DIMENSION closes the process loop in reverse engineering. DIMENSION computes high-quality surface descriptions or triangulations from random point clouds obtained by 3D digitization. Powerful functions are available for model editing. The computed models are transferred in standard formats to CAD or CAD/CAM systems for further processing.

DIMENSION operates under UNIX or Windows with manual or CNC-controlled coordinate measuring machines and ScanMax®.

# METROLOG II



## **Metrolog II**

The PC software focuses sharply on in-process car-body measurement. Ideal for the application and editing of measuring runs programmed in DMIS (Dimensional Measuring Interface Standard), as manufacturer-independent software when modernizing and for consistent operation.

## **DME (Dimensional Measurement Equipment)**

DME is an industrially standardized interface. With this, Carl Zeiss enables users to benefit from the Zeiss metrology strategy using the evaluation software of other manufacturers. The DME interface guarantees the machine accuracy and the application of the Zeiss sensor system. In addition, the Zeiss software library is available to the users of non-Zeiss products via their DME interface.

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