



# DuraMax<sup>®</sup> Specifications

Version: May 2014



We make it visible.

## Dynamics

Travel speed	Motorized	in mm/s	Axes	0 to 100
	CNC	in mm/s	Axes	max. 300
		in mm/s	Vector	max. 520
Acceleration		in m/s <sup>2</sup>	Axes	max. 1
		in m/s <sup>2</sup>	Vector	max. 1.7

## Sensors and accuracy

ZEISS VAST XXT<sup>1)</sup>



Scanning and multi-point sensor. Measuring speed up to 500 points/s while scanning.

Stylus length with module:

TL3 = 30-150 mm (axial); up to 65 mm radial; maximum stylus weight = 15 g;

minimum stylus tip diameter = 0.3 mm

Length measurement error <sup>2)</sup> MPE complies with ISO 10360-2:2009	E0/E40	in $\mu\text{m}$	2.4 + L/300	at 18-22°C
			2.7 + L/250	at 18-26°C
			2.9 + L/200	at 18-30°C
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in $\mu\text{m}$	1.7	
Scanning error MPE complies with ISO 10360-4:2000	THP	in $\mu\text{m}$	2.9	
Required measuring time MPT	$\tau$	in s	55	
Form measurement error <sup>3)</sup> MPE for roundness complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in $\mu\text{m}$	2.4	
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in $\mu\text{m}$	2.4	
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM <sup>5)</sup>	in $\mu\text{m}$	3.9	
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM <sup>5)</sup>	in $\mu\text{m}$	1.2	
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM <sup>5)</sup>	in $\mu\text{m}$	2.7	

## ZEISS DuraMax RT - rotary table

### Dynamics

Max. angular velocity		in °/s	50
Rotation speed		in min <sup>-1</sup>	8.3

### Load/moment

Moment of tilt	Mx	in Nm	max. 40
Available torque	Mz	in Nm	max. 3

### Accuracy<sup>4)</sup>

Axial four-axis error MPE complies with ISO 10360-3:2000	FA	in $\mu\text{m}$	4	at 18-22°C
Radial four-axis error MPE complies with ISO 10360-3:2000	FR	in $\mu\text{m}$	5	at 18-22°C
Tangential four-axis error MPE complies with ISO 10360-3:2000	FT	in $\mu\text{m}$	5	at 18-22°C

1) Acceptance test with TL3 module; stylus length of 70 mm and stylus tip diameter of 8 mm.

2) Measuring length L in mm.

3) Filter used: 50 W/U; scanning speed for roundness: 5 mm/s.

4) Measuring length on ZEISS DuraMax based on typical feature sizes.

5) Measuring location near the calibration position to document sensor properties.

## Technical features

Length measuring system	Glass ceramic length measuring system, photoelectric, 0.2 µm resolution		
Controller	ZEISS DuraMax	Type	based on ZEISS C99
		Protection type	IP53
	ZEISS DuraMax RT	Type	ZEISS C99
		Protection type	IP54
Clamping device	Material	Cast iron	
	Mounts	25 M10 threads, 100 mm hole spacing	
	Flatness	In accordance with DIN 876-3	
Data technology	ZEISS DuraMax comes with a fully equipped workstation.		
Accessories (included)	ZEISS DuraMax	Star stylus kit, stylus rack with 3 stylus slots, reference sphere, ZEISS CALYPSO basic license	
	ZEISS DuraMax RT	Precision rotary table, adapter plate with clamping device, star stylus kit, shopfloor base, one stylus rack including 3 slots, reference sphere, automatic temperature capture, ZEISS CALYPSO basic license	
We recommend:	ZEISS DuraMax	Shopfloor base: ventilated computer cabinet (IP54), lockable; standing control unit with 23" touchscreen monitor and keyboard on swivel arm at an ergonomically correct working height of approx. 105 cm.	
	GEAR option for ZEISS DuraMax RT	Contains: ZEISS GEAR PRO involute, gear wheel stylus kit (41 parts) for inner and outer gearing, specially developed crane chuck, additional stylus rack featuring 3 slots, cover plate for ZEISS DuraMax table	

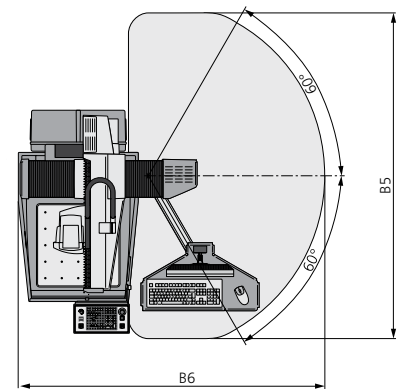
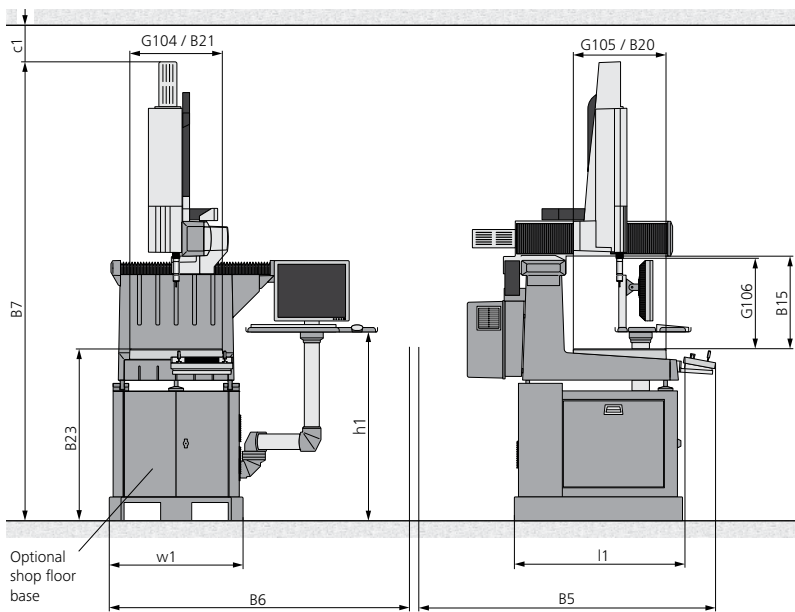
## Environmental conditions

Relative humidity	40-70% (without condensation)		
Ambient temperature	18°C to 30°C		
Temperature fluctuations	per day	in K/d	5.0
	per hour	in K/h	2.0
	spatial	in K/m	1.0
Floor vibrations	ZEISS DuraMax and ZEISS DuraMax RT feature passive vibration damping.		

## Requirements for operational readiness

Ambient temperature	+15°C to +40°C		
Power rating	ZEISS DuraMax	1/N/PE 100 - 240 V~ (±10%); 50-60 Hz Power consumption: max. 600 VA Typical power consumption: 150W	
	ZEISS DuraMax RT	1/N/PE 100/110/120/125/230/240 V~ (±10%); 50-60 Hz Power consumption: max. 2500 VA Typical power consumption: 320W	

ZEISS DuraMax	Dimensions in mm						Weight in kg		
	Measuring range			Working range (Max. workpiece size)			Max. load		
	X axis	Y axis	Z axis	Width	Length	Height			
	G104	G105	G106	B21	B20	B15			
	500	500	500	500	500	500		100	
Basic model	Overall machine dimensions			Footprint		Working height		Assembly space	Measuring machine
	Width	Length	Height	Width	Length	Height	Height	Height	
	B6	B5	B7	w1	l1	B23	h1	c1	
Basic model	1080	1360	1803	670	870	230	-	≥200	350
with standard base	1080	1360	2480	740	910	905	-	≥200	445
With shopfloor base	1770	1710	2511	732	948	940	1038	≥200	515



Top view also for ZEISS DuraMax RT

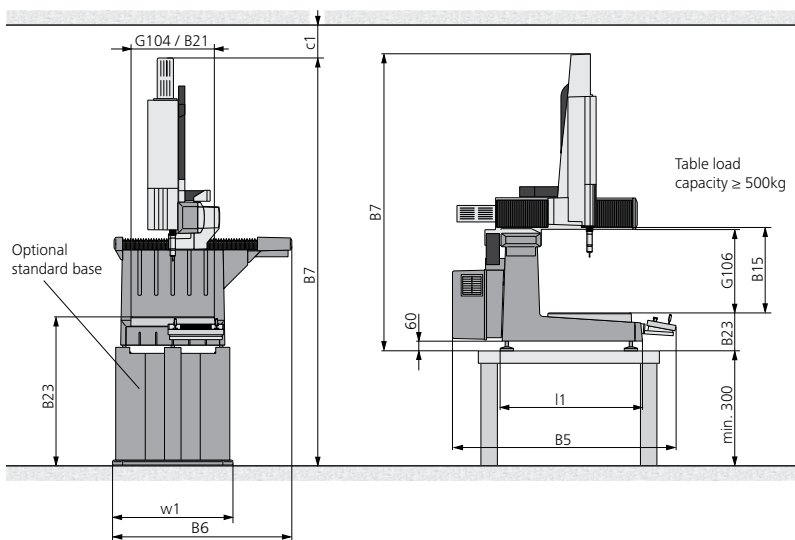
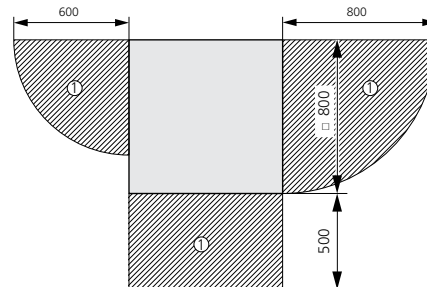
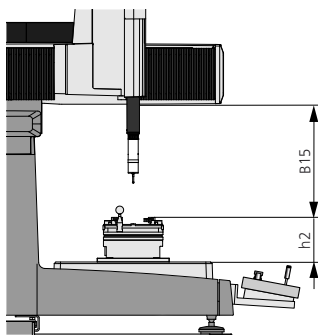
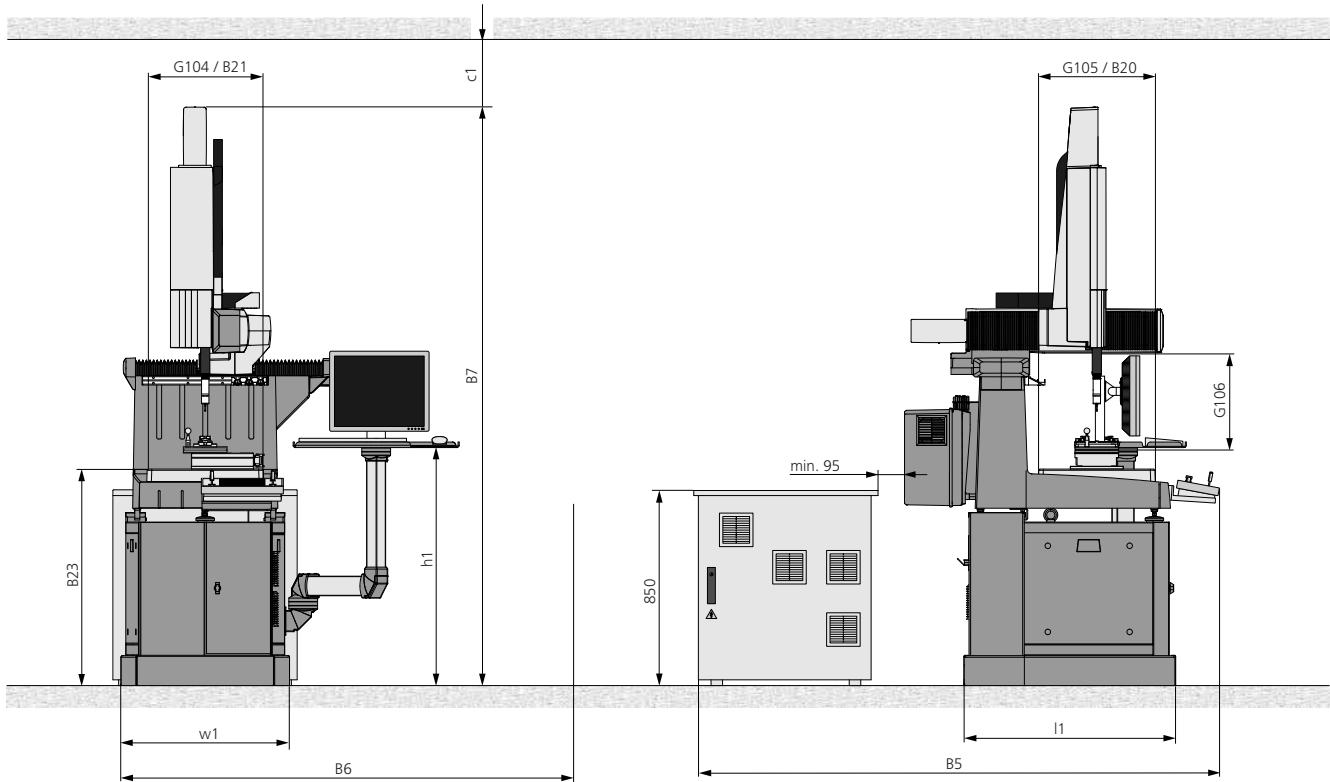


Table load capacity ≥ 500kg

Note: the given dimensions and weights are approximate values. Dimensions in mm. Subject to change. Dimensioning based on DIN 4000-167:2009.

Dimensions in mm									Weight in kg	
Measuring range			Working range			Clamping equipment			Workpiece	Rotary table centering capacity (including clamping equipment and workpiece)
X axis	Y axis	Z axis	Width	Length	Height <sup>1)</sup>	Height	Diameter			
G104	G105	G106	B21	B20	B15	H2				
500	500	410 <sup>2)</sup>	500	500	approx. 350	150	190	approx. 7.5	9	
Overall machine dimensions			Footprint		Working height		Assembly space		Measuring machine	
Width	Length	Height	Width	Length	Height	Height	Height			
B6	B5	B7	w1	l1	B23	h1	c1			
1800	2260	2511	732	948	940	1038	≥200	600		



① Required space for controller cabinet doors and side walls

Note: the given dimensions and weights are approximate values. Dimensions in mm. Subject to change. Dimensioning based on DIN 4000-167:2009.

- 1) Depending on clamping equipment
- 2) Without rotary table: 500 mm

## Approvals

Regulations

ZEISS DuraMax complies with EC machine directive 2006/42/EC and EMC directive 2004/108/EEC.



ZEISS DuraMax RT complies with EC machine directive 2006/42/EC and EMC directive 2004/108/EC.



Disposal

ZEISS products and packaging returned to us are disposed of in accordance with applicable legal provisions.

## Certification/accreditation

Quality management system  
ISO 9001:2008  
VDA 6, Parts 4, 2. Version 2005

Environmental management system  
ISO 14001:2004

Occupational health &  
safety management systems  
BS OHSAS 18001:2007

Accredited  
ISO/IEC 17025:2005