



# **ZEISS DuraMax®**

## **Specifications**

Version: May 2016



## 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

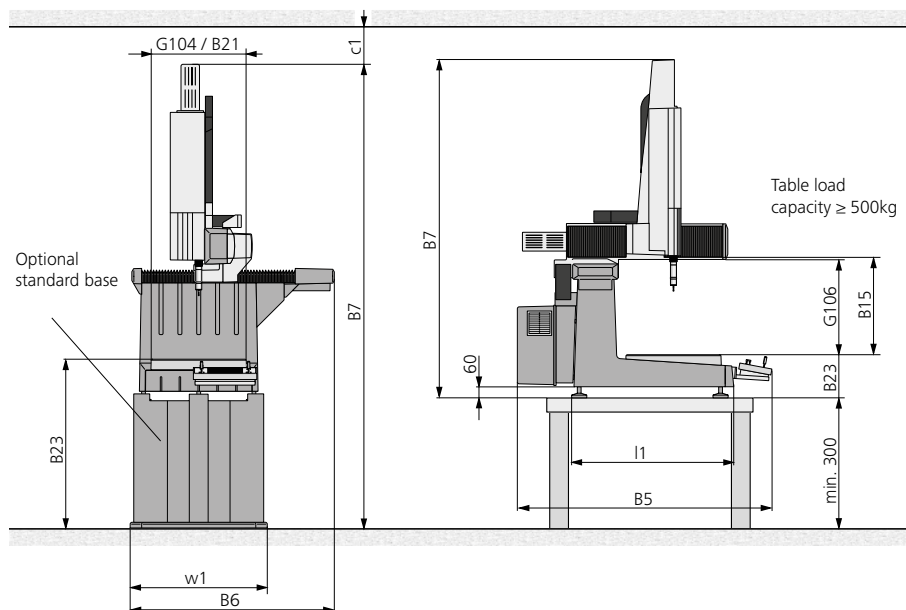
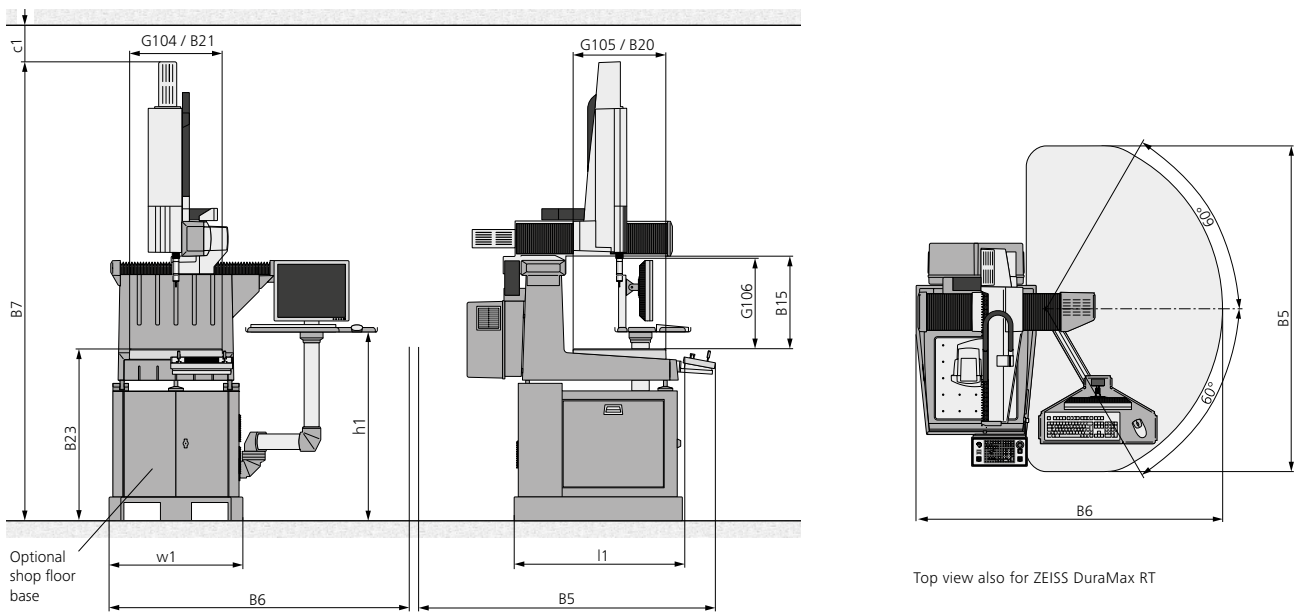
			DuraMax		DuraMax RT		DuraMax HTG	
Length measurement error <sup>2) 4) 6)</sup> MPE complies with ISO 10360-2: 2009	E0/E40	in µm	2.4 + L/300	at 18-22°C	2.4 + L/300	at 18-22°C	2.2 + L/300	at 18-22°C
			2.7 + L/250	at 18-26°C	2.7 + L/250	at 18-26°C	2.5 + L/250	at 18-26°C
			2.9 + L/200	at 18-30°C	2.9 + L/200	at 18-30°C	2.7 + L/200	at 18-30°C
							3.9 + L/100	at 15-40°C
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	1.7		1.7		1.7	
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	2.9		2.9		2.9	
Required measuring time MPT	τ	in s	55		55		55	
Form measurement error <sup>3)</sup> MPE for roundness complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONT (MZCI)	in µm	2.4		2.4		2.4	
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	2.4		2.4		2.4	
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM <sup>5)</sup>	in µm	3.9		3.9		3.9	
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM <sup>5)</sup>	in µm	1.2		1.2		1.2	
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM <sup>5)</sup>	in µm	2.7		2.7		2.7	

## Temperature behavior

Guaranteed accuracy			18-30°C	18-30°C	15-40°C
Temperature fluctuations	per day	in K/d	5.0	5.0	5.0
	per hour	in K/h	2.0	2.0	2.0
	spatial	in K/m	1.0	1.0	1.0

- 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.
- 6) In compliance with the given temperature behavior and not volatile temperature changes.

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		
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



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			
<b>ZEISS DuraMax RT</b> with shopfloor base			Measuring range			Working range			Clamping equipment		Workpiece	Rotary table centering capacity (including clamping equipment and work-piece)
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		

### 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

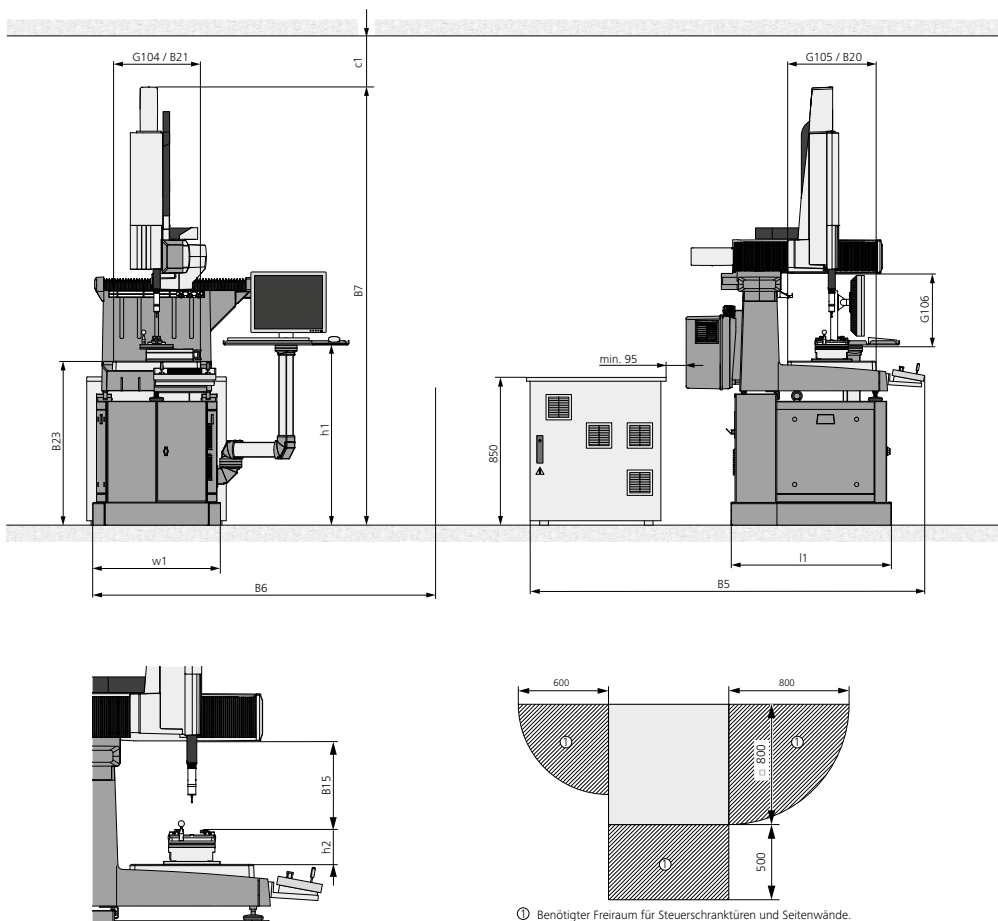
Available torque Mz in Nm max. 3

#### Accuracy<sup>3)</sup>

Axial four-axis error FA in µm 4 at 18-22°C  
MPE complies with ISO 10360-3:2000

Radial four-axis error FR in µm 5 at 18-22°C  
MPE complies with ISO 10360-3:2000

Tangential four-axis error FT in µm 5 at 18-22°C  
MPE complies with ISO 10360-3:2000



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

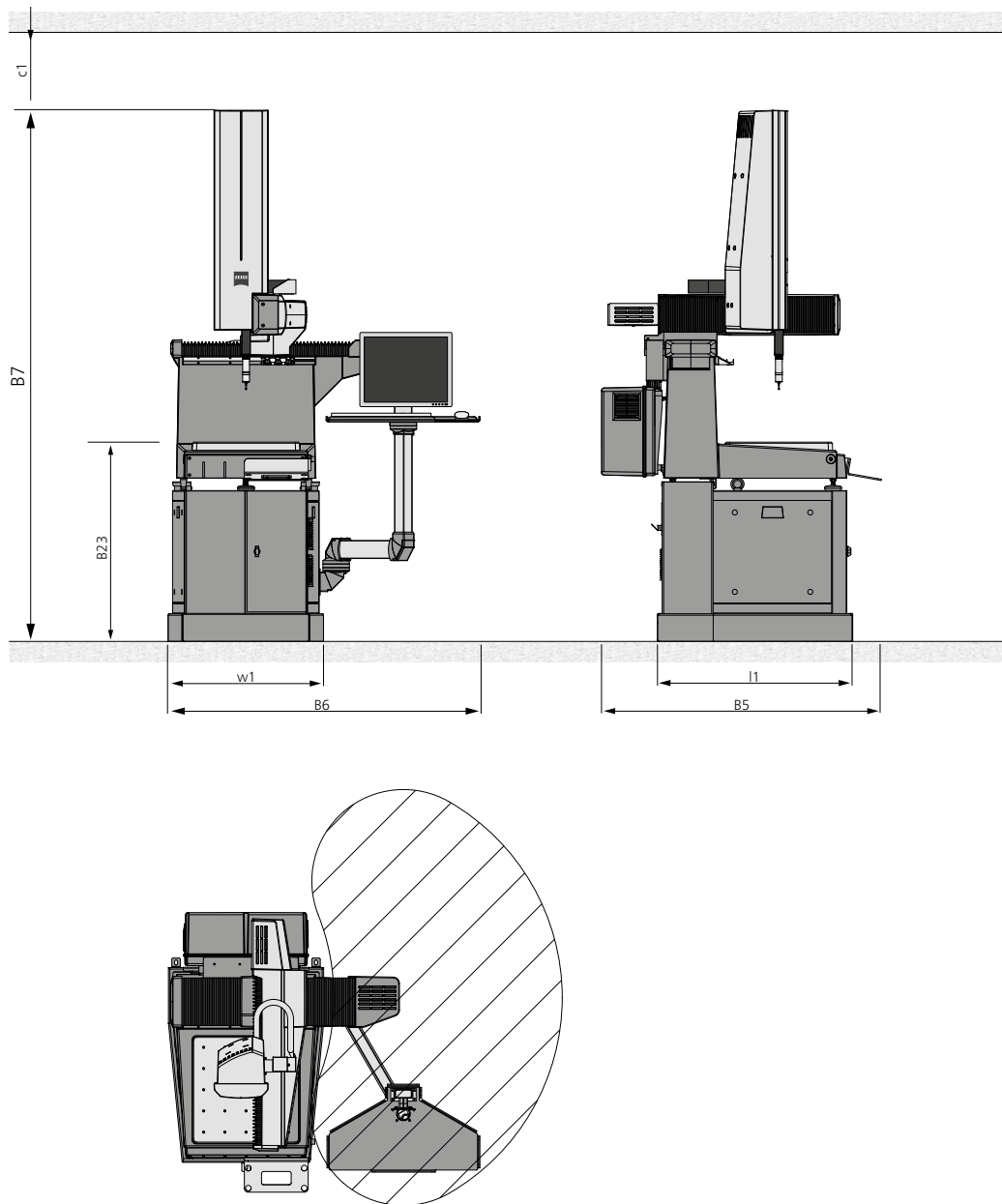
Dimensions in mm							Weight in kg		
<b>ZEISS DuraMax HTG</b> with shopfloor base			Measuring range			Working range (Max. workpiece size)			Max. load
X axis	Y axis	Z axis	Width	Length	Height				
G104	G105	G106	B21	B20	B15				
500	500	500	500	480	500				100
Overall machine dimensions			Footprint		Working height		Assembly space	Measuring machine	
Width	Length	Height	Width	Length	Height	Height	Height		
B6	B5	B7	w1	l1	B23	h1	c1		
1770	1710	2511	732	948	940	1038	≥200	530	

### Temperature behavior

Guaranteed accuracy <sup>2) 4) 6)</sup>

Temperature fluctuations tested and approved  
under real shop floor conditions for typical applications

per day	in K/d	10.0	2.2 + L/50	at 18 - 22°C
per hour	in K/h	3.0	2.5 + L/40	at 18 - 26°C
spatial	in K/m	1.0	2.7 + L/30	at 18 - 30°C
			3.9 + L/30	at 15 - 40°C



- 2) Measuring length L in mm.
- 4) Measuring length on ZEISS DuraMax based on typical feature sizes.
- 6) In compliance with the given temperature behavior and not volatile temperature changes.

## Technical features

Controller	Based on ZEISS C99	
	Protection class IP54.	
Clamping device	Material	Cast iron
	Mounts	25 M10 threads, 100 mm hole spacing
	Flatness	In accordance with DIN 876-III





## Environmental conditions

Relative humidity	40-70% (without condensation)
Ambient temperature	15 - 40°C
Floor vibrations	ZEISS DuraMax, ZEISS DuraMax RT and ZEISS DuraMax HTG with passive vibration damping.

## Requirements for operational readiness

	DuraMax	DuraMax RT	DuraMax HTG
Electrical power rating	1/N/PE 100 - 240 V~ (±10%); 50-60 Hz Power consumption: max. 600 VA; typical power consumption: 150W	1/N/PE 100/110/120/125/230/240 V~ (±10%); 50-60 Hz Power consumption: max. 2500 VA; typical power consumption: 320W	1/N/PE 100 - 240 V~ (±10%); 50-60 Hz Power consumption: max. 600 VA; typical power consumption: 150W

## Approvals

Regulations	ZEISS DuraMax complies with EC machine directive 2006/42/EC and EMC directive 2014/30/EU.   
	ZEISS DuraMax RT and ZEISS DuraMax HTG comply with EC machinery directive 2006/42/EC and EMC directive 2014/30/EU. 
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

**Carl Zeiss**  
**Industrielle Messtechnik GmbH**  
73446 Oberkochen / Germany  
Sales: +49 7364 20-6336  
Service: +49 7364 20-6337  
Fax: +49 7364 20-3870  
Email: [info.metrology.de@zeiss.com](mailto:info.metrology.de@zeiss.com)  
Internet: [www.zeiss.de/imt](http://www.zeiss.de/imt)

**Carl Zeiss**  
**Industrial Metrology, LLC**  
6250 Sycamore Lane North  
Maple Grove, MN 55369/USA  
Phone: +1 763 744-2400  
Fax: +1 763 533-0219  
Email: [info.metrology.us@zeiss.com](mailto:info.metrology.us@zeiss.com)  
Internet: [www.zeiss.com/metrology](http://www.zeiss.com/metrology)