



# **ZEISS MMZ T**

## **Specifications**

Version: November 2017



## System description

Type according to ISO 10360-1:2000	Moving bridge CMM		
Operating mode	motorized / CNC		
Sensor mounts	Fixed installation of ZEISS VAST gold / articulating sensor holder ZEISS RDS		
Software	ZEISS CALYPSO, ZEISS GEAR PRO, ZEISS HOLOS		
Travel speed	motorized	Axes	0 to 90 mm/s
	CNC	Axes	max. 300 mm/s
		Vector	max. 520 mm/s
Acceleration	Axes	300 mm/s <sup>2</sup>	
	Vector	520 mm/s <sup>2</sup>	
Scanning speed	max. 200 mm/s		

## Sensors and accuracy

The CMM specifications are only valid when using original accessories by ZEISS. The specified parameters are observed in the application of the internal test instructions for acceptance testing and in the use of the released standards in accordance with the ISO 10360 series.

ZEISS VAST XT gold <sup>1)</sup>

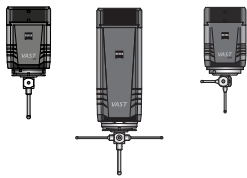
Active scanning and multipoint sensor.

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

Variable measuring force (50-1000 mN) for data acquisition.

ZEISS VAST XTR gold <sup>1)</sup>

Scanning measuring rate up to 500 points/s.



ZEISS VAST XT gold: stylus: max. length = 500 mm, max. weight = 500 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.

ZEISS VAST gold: stylus: max. length = 800 mm, max. weight = 800 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.

ZEISS VAST XTR gold: max. length = 350 mm, max. weight = 500 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.

			21/32/12 and 21/44/12	21/32/16 and 21/44/16
<b>Length measurement error</b> <sup>2)</sup> MPE complies with ISO 10360-2:2009	E0 <sup>3)</sup>	in $\mu\text{m}$	2.4 + L/400	2.8 + L/400
	E150 <sup>3)</sup>	in $\mu\text{m}$	2.4 + L/400	2.8 + L/400
<b>Repeatability range of E0</b> MPL complies with ISO 10360-2:2009	R0 <sup>3)</sup>	in $\mu\text{m}$	1.5	1.8
<b>Scanning error</b> MPE complies with ISO 10360-4:2000	THP <sup>3)</sup>	in $\mu\text{m}$	2.8	3.2
Required measuring time MPT	$\tau$	in s	62	62
<b>Form measurement error</b> MPE for roundness <sup>4)</sup> complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI) <sup>3)</sup>	in $\mu\text{m}$	2.5	2.9
<b>Single stylus form probing error</b> MPE complies with ISO 10360-5:2010	PFTU <sup>3)</sup>	in $\mu\text{m}$	2	2.4

1) Acceptance test with stylus length of 75 mm and tip diameter of 12 mm

2) Measuring length L in mm.

3) In compliance with the specified ambient conditions.

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

**ZEISS RDS-D-CAA**



Dynamic ZEISS RDS-D articulating unit for optical and contact sensors.

Lateral swivel axis provides more advantages over articulating joints with front-to-back and lateral tilt axis: Front-to-back and lateral tilt range of  $\pm 180^\circ$ , large measuring range, rotation increments of  $2.5^\circ$ , CAA correction for automatic calibration for measuring multi-point sensors of all 20.736 angular positions.

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



Scanning and multi-point sensor on ZEISS RDS-D. Scanning measuring rate up to 500 points/s. Stylus length with module: TL3 = 30-150 mm; maximum sensor extension = 100 mm, maximum stylus weight = 15 g, minimum stylus tip diameter = 0.3 mm

				21/32/12 and 21/44/12	21/32/16 and 21/44/16
<b>Length measurement error <sup>2)</sup></b> MPE complies with ISO 10360-2:2009	E0 <sup>3)</sup>	in $\mu\text{m}$	3.0 + L/350	3.4 + L/350	
	E150 <sup>3)</sup>	in $\mu\text{m}$	3.0 + L/350	3.4 + L/350	
<b>Repeatability range of E0</b> MPL complies with ISO 10360-2:2009	R0 <sup>3)</sup>	in $\mu\text{m}$	1.9	2.2	
	THP <sup>3)</sup>	in $\mu\text{m}$	3.5	3.9	
<b>Scanning error</b> MPE complies with ISO 10360-4:2000					
	Required measuring time MPT	$\tau$	in s	68	68
<b>Form measurement error</b> MPE for roundness <sup>4)</sup> complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONT (MZCI) <sup>3)</sup>	in $\mu\text{m}$	3.2	3.6	
<b>Single stylus form probing error</b> MPE complies with ISO 10360-5:2010	PFTU <sup>3)</sup>	in $\mu\text{m}$	2.5	2.9	

**ZEISS LineScan <sup>5) 6)</sup>**



Optical laser triangulation scanner on ZEISS RDS-D.

				21/32/12 and 21/44/12	21/32/16 and 21/44/16
25 mm working range 63 mm working distance					
<b>Probing error <sup>7)</sup></b> MPE complies with ISO 10360-8	PF (OT)	in $\mu\text{m}$	12	12	
	<b>Dispersion on sphere</b>	1 Sigma	in $\mu\text{m}$	4	4
50 mm working range 94 mm working distance					
<b>Probing error <sup>7)</sup></b> MPE complies with ISO 10360-8	PF (OT)	in $\mu\text{m}$	20	20	
	<b>Dispersion on sphere</b>	1 Sigma	in $\mu\text{m}$	5	5
100 mm working range 220 mm working distance					
<b>Probing error <sup>7)</sup></b> MPE complies with ISO 10360-8	PF (OT)	in $\mu\text{m}$	50	50	
	<b>Dispersion on sphere</b>	1 Sigma	in $\mu\text{m}$	12	12

1) Acceptance test with TL3 module; stylus length of 50 mm and stylus tip diameter of 8 mm.

2) Measuring length L in mm.

3) In compliance with the specified ambient conditions.

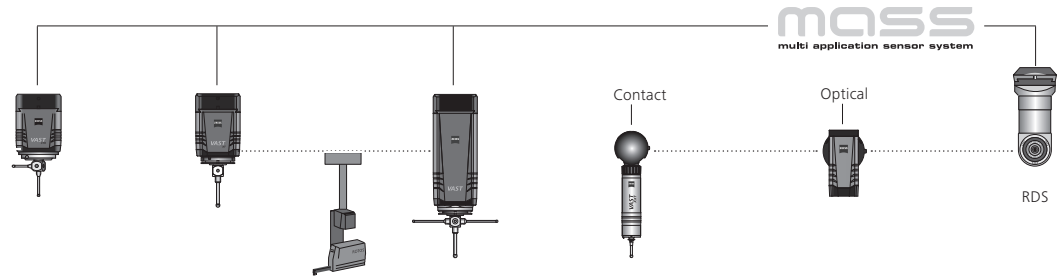
4) Filter used: 50 W/U; scanning speed for roundness: 5 mm/s.

5) The use of optical probes requires calibration with a contact probe (e.g. ZEISS VAST XXT).

6) Laser class 2M: The accessible laser beam is in the visible spectral range that is safe for the eye at a short exposure time (0.25 s) as long as the cross section is not reduced by optical instruments (e.g. magnifiers, lens elements, telescope).

7) Probing tolerance in the center of the measuring range on a suitable sphere (30 mm diameter) with matte surface. According to ISO 10360-8 PF(OT) indicates D.95 %, Tr, Opt. The information on the working distance refers to the center of the measuring range.

## Sensor overview



	VAST XTR gold	VAST XT gold	ROTOS	VAST gold	VAST XXT	LineScan
Multi-point	■	■		■	■	
Passive scanning					■	
Active scanning	■	■		■		
Optical scanning						■
Roughness measurement			■			
Rotatable / tiltable			■		■	■
Max. stylus length <sup>1)</sup>	350/500 mm	500 mm		800 mm <sup>2) 3)</sup>	150 mm	
Max. stylus weight <sup>1)</sup>	500 g	500 g		800 g <sup>2)</sup>	15 g	
Navigator	■	■		■		

### Technical features

Length measuring system	Steel scales and automatic temperature compensation, resolution 0.1 µm
Controller	Type ZEISS C99 in MCC 800
	Protection type IP54
	Cooling system Fan/ optional air conditioner
Accessories (optional)	Various control panels, multi-sensor rack for storage of stylus systems Rotary tables, integrated and as setup variant

### Environmental requirements

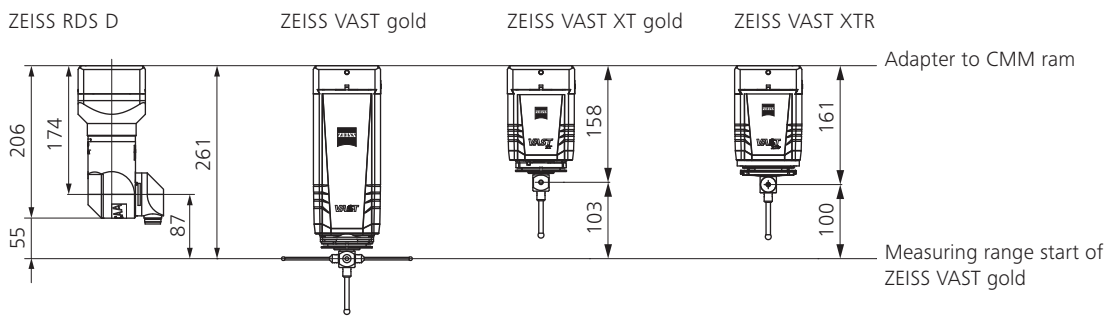
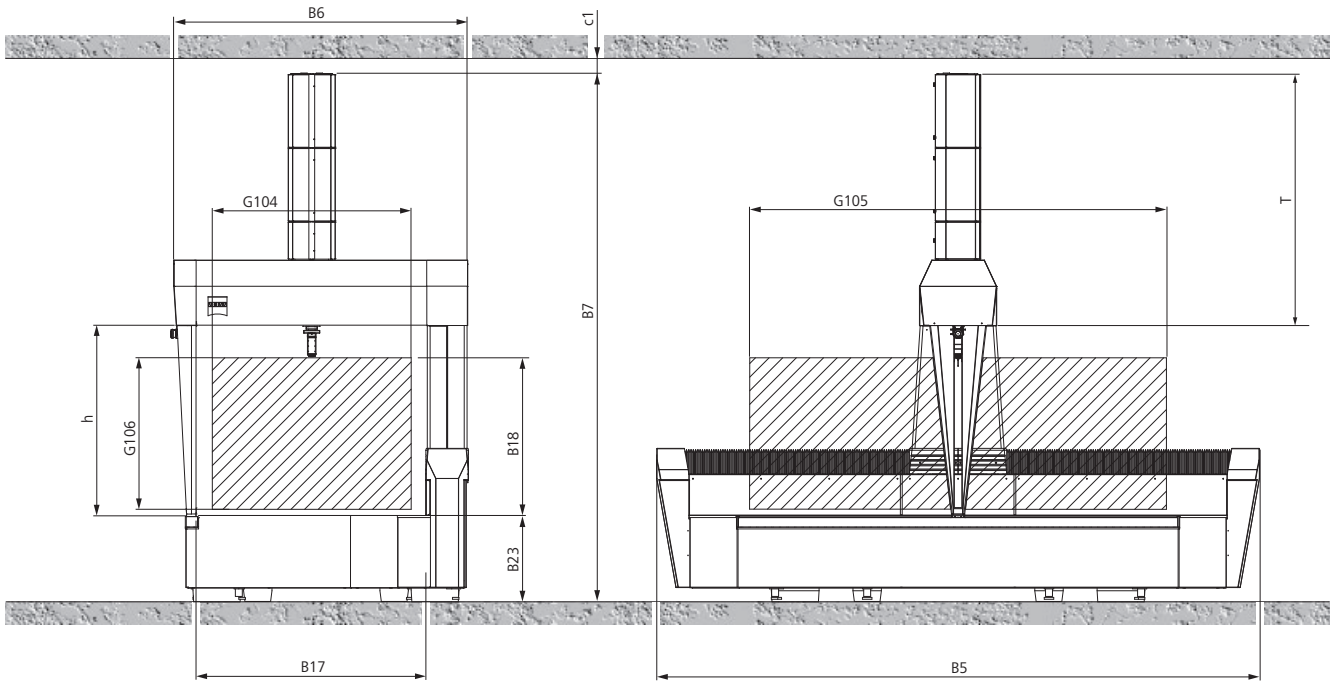
Relative humidity	40 % - 70 % (without condensation)
Measuring reference temperature	18 °C - 22 °C
	per day 2.0 K/d
	per hour 1.0 K/h
	spatial 0.5 K/m

### Requirements for operational readiness

Relative humidity	Max. 70 % without condensation
Ambient temperature	10 °C - 35 °C
Electrical power rating	1/N/PE 100/110/115/120/125/230/240 VAC ~ (±10 %); 5060 Hz (±3.5 %), Power consumption with MCC 800: max. 3000 VA Typical power consumption: 550 W
Compressed air supply	The ZEISS MMZ T requires compressed air for the use of ZEISS RDS and for the standard integrated vibration insulation via air bearings. Supply pressure 6-10 bar (87-145 psi), pre-cleaned. Air quality complies with ISO 8573 part 1: Class 4 Air consumption of approx. 81 NI/min.

1) Depending on the application, limiting the parameters for a stylus system may be useful.  
2) Special lengths (e.g. 1200 mm) are available upon request when ZEISS ThermoFit XL styli are used.  
3) To ensure specified accuracies

ZEISS MMZ T sizes	Dimensions in mm												Weight in kg		
	Measuring range			Overall machine dimensions			Working range (Max. workpiece size)			Table height	As-sembly space	Transport height <sup>1)</sup>	Max. work-piece	Measuring machine weight	
	X axis	Y axis	Z axis	Width	Length	Height	Width	Length	Height	Height	Height	Height			
	G104	G105	G106	B6	B5	B7	B17	B16	B18	h	B23	c1	T		
21/32/12	2100	3200	1200	3110	5160	4821	2427	3480	1265	1596	916	100	2309	10000	12500
21/44/12	2100	4400	1200	3110	6360	4821	2427	4680	1265	1596	916	100	2309	10000	16250
21/32/16	2100	3200	1600	3110	5160	5621	2427	3480	1665	1995	916	100	2709	10000	12800
21/44/16	2100	4400	1600	3110	6360	5621	2427	4680	1665	1995	916	100	2709	10000	16250



Note: The given dimensions and weights are approximate values. Subject to change. Actual appearance of specific sizes may vary from illustration. Dimensioning based on DIN 4000-167:2009.

1) Transport height of the secured machine group from upper edge of steel measuring table.

## Approvals

Regulations ZEISS MMZ T complies with EC machine directive 2006/42/EG and EMC directive 2014/30/EU.



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

## Certifications/accreditations

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

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