

ZEISS MMZ M Specifications

Stand: 2020-11



Seeing beyond

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 NT			
Travel speed	Set-up mode	in mm/s	Axes	0 to 90
	Batch measurement mode	in mm/s	Axes	max. 300
		in mm/s	Vector	max. 500
Acceleration		in mm/s ²	Axes	max. 300
		in mm/s ²	Vector	max. 520
Scanning speed		in mm/s		max. 200

Sensors and accuracy (the following accuracies apply to a temperature range of 18 °C - 22 °C)

The functionality of the device and its specifications are only achievable 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 gold ¹⁾

ZEISS VAST XT gold ¹⁾

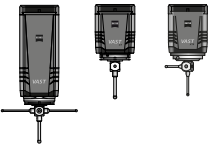
ZEISS VAST XTR gold ¹⁾

Scanning and single-point sensor.

Active scanning and multipoint sensor.

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

Scanning measuring rate up to 500 points/s.



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

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

			X=2000 Z=1200	X=2000 Z=1600	X=2000 Z=2000	X=3000 Z=1200	X=3000 Z=1600	X=3000 Z=2000
Length measurement error ²⁾ MPE complies with ISO 10360-2:2009	E0/E150	in µm	2.2 + L/400	2.6 + L/400	2.8 + L/400	2.6 + L/400	3.0 + L/400	3.2 + L/400
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	1.3	1.5	1.6	1.5	1.7	1.8
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	2.2	2.7	2.9	2.7	3.1	3.3
Required measuring time MPT	τ	in s	64	68	68	64	68	68
Form measurement error MPE for roundness ³⁾ as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in µm	2	2.4	2.6	2.4	2.8	2.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	1.7	2.0	2.1	2.0	2.3	2.4

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

2) Measuring length L in mm.

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

ZEISS RDS



Dynamic ZEISS RDS 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 $\pm 145^\circ$; large measuring range, rotation increments of 2.5° ,
 CAA correction for automatic calibration for measuring multi-point sensors of all 20.736 angular positions.

ZEISS VAST XXT¹⁾



Scanning and single-point sensor. 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

			X=2000 Z=1200	X=2000 Z=1600	X=2000 Z=2000	X=3000 Z=1200	X=3000 Z=1600	X=3000 Z=2000
Linear measuring tolerance²⁾ MPE complies with ISO 10360-2:2009	E0/E150	in μm	2.8 + L/350	3.2 + L/350	3.4 + L/350	3.2 + L/350	3.6 + L/350	3.8 + L/350
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in μm	1.7	1.9	2.0	1.9	2.1	2.2
Scanning error MPE complies with ISO 10360-4:2000	THP	in μm	2.9	3.4	3.6	3.4	3.8	4.0
Required measuring time MPT	τ	in s	68	72	72	68	72	72
Form measurement error MPE for roundness ³⁾ as per DIN ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONt (MZCI)	in μm	2.7	3.1	3.3	3.1	3.5	3.6
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in μm	2.2	2.5	2.6	2.5	2.8	2.9

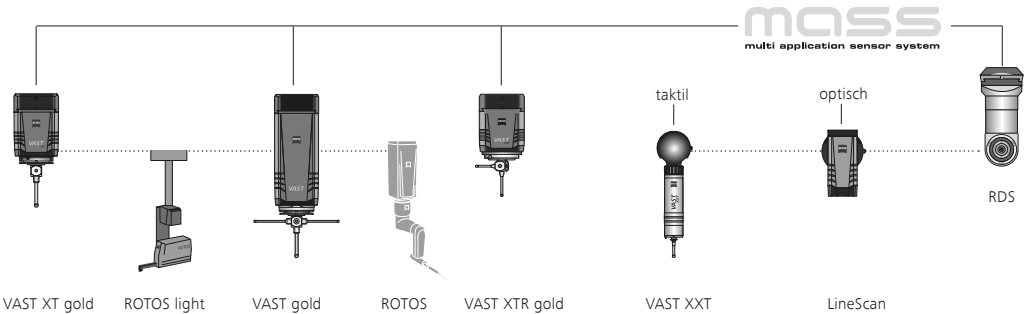
ZEISS LineScan³⁾⁻⁴⁾



Optical laser triangulation scanner on ZEISS RDS-D

			X=2000 Z=1200	X=2000 Z=1600	X=2000 Z=2000	X=3000 Z=1200	X=3000 Z=1600	X=3000 Z=2000
25 mm working range 63 mm working distance								
Probing dispersion⁵⁾ MPE complies with ISO 10360-8	PF (OT)	in μm	12	12	12	12	12	12
Dispersion on sphere	1 Sigma	in μm	4	4	4	4	4	4
50 mm working range 94 mm working distance								
Probing dispersion⁵⁾ MPE complies with ISO 10360-8	PF (OT)	in μm	20	20	20	20	20	20
Dispersion on sphere	1 Sigma	in μm	5	5	5	5	5	5
100 mm working range 220 mm working distance								
Probing dispersion⁵⁾ MPE complies with ISO 10360-8	PF (OT)	in μm	50	50	50	50	50	50
Dispersion on sphere	1 Sigma	in μm	12	12	12	12	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. Measured with RDS angle position A=0° and B=0°
 3) The use of optical probes requires calibration with a contact probe (e.g. ZEISS VAST XXT).
 4) 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).
 5) Probing dispersion 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.



	VAST XT gold	ROTOS light	VAST gold	ROTOS	VAST XTR gold	VAST XXT	LineScan
Multi-point	■		■		■	■	
Passive scanning						■	
Active scanning	■		■		■		
Optical scanning							■
Roughness measurement		■		■			
Rotatable / tiltable		■		■		■	■
Max. stylus length ¹⁾	500 mm		800 mm ^{2) 3)}		350 mm	250 mm	
Max. stylus weight ¹⁾	500 g		800 g ²⁾		500 g	15 g	
VAST navigator / VAST performance	■		■		■		

Technical features

Length measuring system	Steel scales and online 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 setup

Environmental requirements ²⁾

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

Requirements for operational readiness

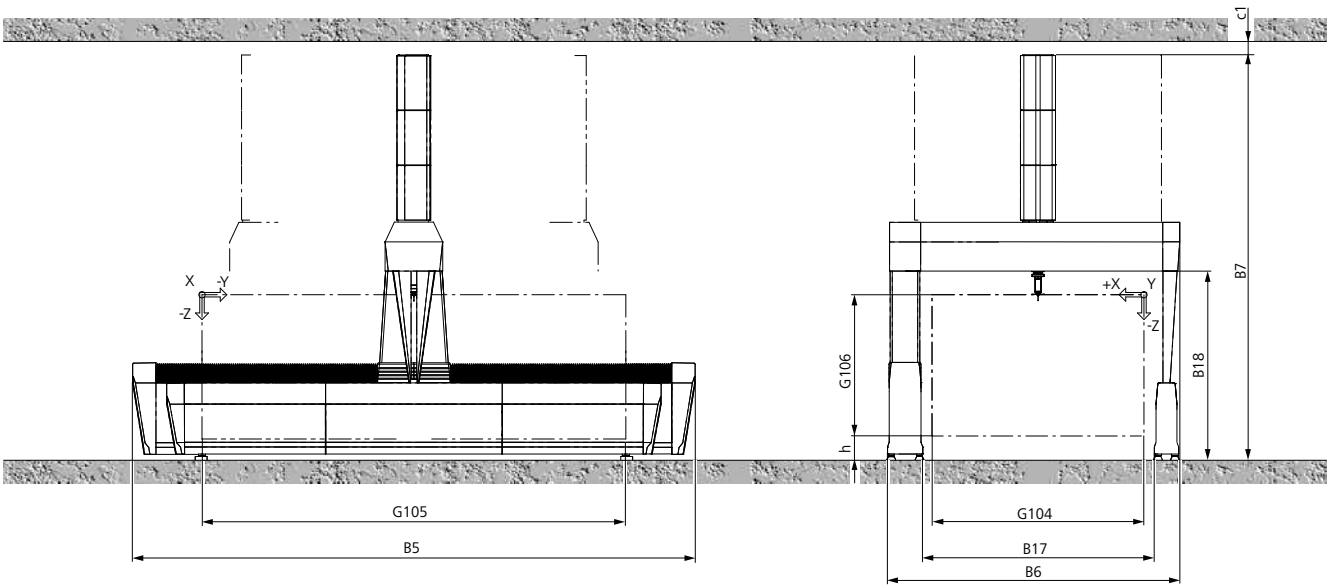
Relative humidity	max. 70 % (without condensation)
Ambient temperature	10 °C - 35 °C

Connection data

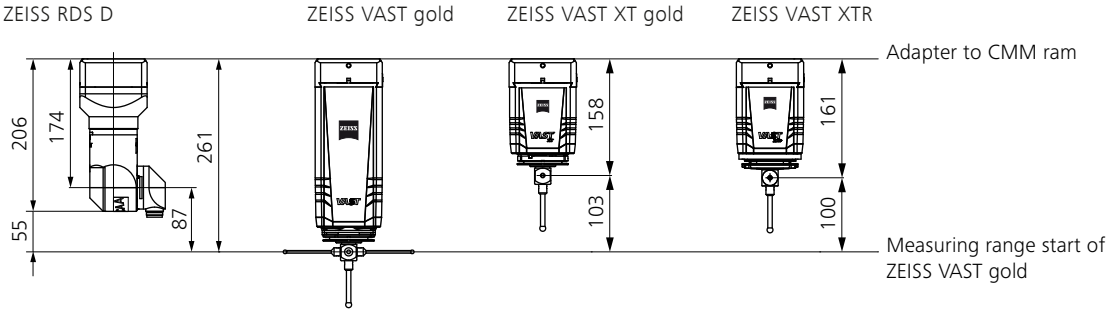
Electrical power rating	1/N/PE 100/110/115/120/125/230/240 VAC ~ (±10 %); 50-60Hz (±3.5 %), Power consumption with MCC 800: max. 3000 VA. Typical power consumption: 550W Amount of heat generated: max. 10800 kJ/h
Compressed air supply	The ZEISS MMZ M requires compressed air in the following cases 1. For pneumatic weight compensation in the ram. This is only necessary for Z=2000 mm Supply pressure: 6-10 bar, pre-cleaned. Air quality complies with ISO 8573 part 1: class 4 Consumption of approx. 80 NI/min. 2. In general, when an RDS articulating probe holder is used: 99 % pure air (as described below) is required. Please provide the compressed air required to operate your CMM as described below: Air quality complies with ISO 8573 Part 1: Class 4, i.e. Paragraph. 6.1: max. particle size 15 µm, max. dirt particle concentration 8 mg/m ² Paragraph 6.2: max. compressed air dew point +3 °C Paragraph 6.3: max. oil concentration of 5 mg/m ³ If the air supply does not comply with the above requirements, an additional air filter unit and, if necessary, a membrane dryer must be inserted in the compressed air line.

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

ZEISS MMZ M sizes ¹⁾	Dimensions in mm										Weight in kg	
	Measuring range			Overall machine dimensions			Working range (Max. workpiece size)			Assembly space	Measuring machine weight	Max. workpiece
	X axis	Y axis	Z axis	Width	Length	Height	Width	Height	Height	Height		
	G104	G105	G106	B6	B5	B7	B17	B18	h	c1		
20/30/12	2000	3000	1200	3132	4962	4379	2285	2075	550	200	6445	¹⁾
20/45/12	2000	4500	1200	3132	6462	4379	2285	2075	550	200	8833	¹⁾
20/60/12	2000	6000	1200	3132	7962	4379	2285	2075	550	200	11173	¹⁾
20/30/16	2000	3000	1600	3132	4962	4979	2285	2275	350	200	6580	¹⁾
20/45/16	2000	4500	1600	3132	6462	4979	2285	2275	350	200	8968	¹⁾
20/60/16	2000	6000	1600	3132	7962	4979	2285	2275	350	200	11308	¹⁾
20/30/20	2000	3000	2000	3132	4962	5779	2285	2675	350	200	6812	¹⁾
20/45/20	2000	4500	2000	3132	6462	5779	2285	2675	350	200	9200	¹⁾
20/60/20	2000	6000	2000	3132	7962	5779	2285	2675	350	200	11540	¹⁾
30/30/12	3000	3000	1200	4132	4962	4379	3285	2075	550	200	6893	¹⁾
30/45/12	3000	4500	1200	4132	6462	4379	3285	2075	550	200	9281	¹⁾
30/60/12	3000	6000	1200	4132	7962	4379	3285	2075	550	200	11621	¹⁾
30/30/16	3000	3000	1600	4132	4962	4979	3285	2275	350	200	7028	¹⁾
30/45/16	3000	4500	1600	4132	6462	4979	3285	2275	350	200	9416	¹⁾
30/60/16	3000	6000	1600	4132	7962	4979	3285	2275	350	200	11756	¹⁾
30/30/20	3000	3000	2000	4132	4962	5779	3285	2675	350	200	7260	¹⁾
30/45/20	3000	4500	2000	4132	6462	5779	3285	2675	350	200	9648	¹⁾
30/60/20	3000	6000	2000	4132	7962	5779	3285	2675	350	200	11988	¹⁾



For a 1600 mm Z axis, drive and support arms shortened by 400 mm are used.
 For a 1200 mm Z axis, drive and support arms shortened by 600 mm are used.



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) Depending on thickness of foundation

Approvals**Regulations**

ZEISS MMZ M complies with EC machine directive 2006/42/EG, the EMC directive 2014/30/EU and the RoHS directive 2011/65/EU.

**Disposal**

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

Certification/accreditation**Quality management system**ISO 9001:2015
VDA 6, Parts 4, 3. Version 2017**Environmental management system**

ISO 14001:2015

Occupational health & safety management systems

BS OHSAS 18001:2007

Accredited

ISO/IEC 17025:2005

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