



ZEISS CONTURA®

Specifications

Version: 2021-11

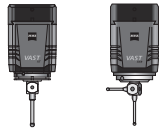


Seeing beyond

ZEISS CONTURA active sensors and accuracy

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 XT gold ZEISS VAST XTR gold



Active scanning and multipoint sensor. Scanning measuring rate up to 500 points/s.
Variable measuring force (50-1000 mN) for data acquisition.
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: max. length (rigid) = 500 mm, max. length (during rotation) = 350 mm, max. weight = 500 g, including stylus adapter, min. stylus tip diameter = 0.5 mm.

			7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Length measurement error ^{1) 2)} MPE complies with ISO 10360-2:2009	E0 / E150 18°C - 22°C 18°C - 26°C	in µm in µm	1.5 + L/350 1.5 + L/250	1.6 + L/350 1.6 + L/250	1.6 + L/350 1.6 + L/250	1.9 + L/350 1.9 + L/250
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	1.2	1.4	1.4	1.5
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	2.0	2.5	2.5	3.5
Required measuring time MPT	τ	in s	40	40	40	40
Form measurement error ³⁾ MPE for roundness complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONT (MZCI)	in µm	1.5	1.7	1.7	1.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	1.5	1.7	1.7	1.8
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM ⁴⁾	in µm	2.5	3.5 4.1 ⁵⁾	3.5 4.1 ⁵⁾	3.9 4.5 ⁵⁾
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM ⁴⁾	in µm	1.2	2.1	2.1	2.5
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM ⁴⁾	in µm	1.7	2.4 2.9 ⁵⁾	2.4 2.9 ⁵⁾	2.8 3.3 ⁵⁾

ZEISS CONTURA RDS sensors and accuracy

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 RDS-D-CAA



Dynamic ZEISS RDS articulating unit for optical and contact sensors.
Front-to-back and lateral tilt range of ±180°, large measuring range, rotation increments of 2.5°, CAA correction for automatic qualification of all 20.736 angular positions for scanning sensors (ZEISS VAST XXT TL3) and multiple-point sensors (ZEISS XDT TL3).

ZEISS VAST XXT ZEISS XDT



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

			7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Length measurement error ^{2) 6)} MPE complies with ISO 10360-2:2009	E0 / E40 18 °C - 22 °C 18 °C - 26 °C	in µm in µm	1.7 + L/350 1.7 + L/250	1.8+L/350 1.8+L/250	1.8+L/350 1.8+L/250	2.0 + L/350 2.0 + L/250
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm	1.7	1.8	1.8	1.9
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	2.7	2.8	2.8	3.6
Required measuring time MPT	τ	in s	50	50	50	50
Form measurement error ³⁾ MPE for roundness complies with ISO 12181 (VDI/VDE 2617 sheet 2.2)	RONT (MZCI)	in µm	1.7	1.8	1.8	1.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	1.7	1.8	1.8	1.9

- 1) ZEISS VAST XT gold: acceptance test with 60 mm stylus and 8 mm stylus tip. Also valid for other styli (Ø 3 x 33 mm, Ø 5 x 50 mm, Ø 8 x 114 mm and Ø 12 x 92 mm were tested).
- 2) Measuring length L in mm. Measured with RDS angle position A=0° and B=0°
- 3) Roundness in Scanning Mode on a 50 mm ring gauge for Vscan = 5 mm/s, filter 50 UPR.
- 4) Measuring location near the calibration position to document sensor properties.
- 5) Applies to ZEISS VAST XTR gold.
- 6) ZEISS VAST XXT: acceptance test with TL3 module; 50 mm stylus and 3 mm stylus tip diameter. E40 acceptance applies only in conjunction with RDS-D.

ZEISS CONTURA direct 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 XXT ¹⁾ ZEISS XDT



ZEISS VAST XXT TL3: scanning and multiple-point sensor
ZEISS XDT TL3: multiple-point sensor

(See ZEISS CONTURA RDS sensors and accuracies,
ZEISS VAST XXT and ZEISS XDT for accuracies)

ZEISS ViScan ²⁾



Optical 2D image sensor with autofocus on ZEISS RDS-D.
Working distance (depending on lens): 75 - 90 mm.

			7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Length measurement error ³⁾ MPE complies with ISO 10360-7: 2011	EU(XY)	in µm	10 ⁵⁾ + L/350	10 ⁵⁾ + L/350	10 ⁵⁾ + L/350	10 ⁵⁾ + L/350
MPE probing error of the image editing system as per ISO 10360-7:2011	PFV2D	in µm	10 ⁵⁾	10 ⁵⁾	10 ⁵⁾	10 ⁵⁾

ZEISS LineScan ^{2) 4)}



Optical laser triangulation scanner on ZEISS RDS-D.

			7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
8 mm Measuring range 32 mm Working distance						
Probing dispersion ⁶⁾ MPE complies with ISO 10360-8:2013	PF (OT)	in µm	3.3	3.3	3.3	3.3
Dispersion on sphere	1 Sigma	in µm	0.9	0.9	0.9	0.9
25 mm Measuring range 63 mm Working distance						
Probing dispersion ⁶⁾ MPE nach ISO 10360-8:2013	PF (OT)	in µm	12	12	12	12
Dispersion on sphere	1 Sigma	in µm	4	4	4	4
50 mm Measuring range 94 mm Working distance						
Probing dispersion ⁶⁾ MPE complies with ISO 10360-8:2013	PF (OT)	in µm	20	20	20	20
Dispersion on sphere	1 Sigma	in µm	5	5	5	5
100 mm Measuring range 220 mm Working distance						
Probing dispersion ⁶⁾ MPE complies with ISO 10360-8:2013	PF (OT)	in µm	50	50	50	50
Dispersion on sphere	1 Sigma	in µm	12	12	12	12

1) Acceptance test with TL3 module; stylus length of 50 mm and stylus tip diameter of 3 mm.

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

3) Measuring length L in mm. Measured with RDS angle position A=0° and B=0°

4) Laser class 2M: the accessible laser beam lies 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) Measured with ZEISS ViScan 1x lens

6) Probing dispersion in the center of the measuring range on suitable sphere (30 mm diameter) with matte surface. P[Form.Sph.D95%:Tr:ODS]. The information on the working distance is based on the center of the measuring range.

ZEISS DotScan
Measuring rang 1 mm ²⁾



Optical confocal white light distance sensor on RDS-D CAA,
Scanning measuring rate up to 1000 points/s, Working distance 10,5 mm, resolution 28 nm,
measurable surface inclination to beaming direction 90° ±30° ¹⁾, measuring spot diameter 8 µm

				7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	1,7 + L/350	1,8 + L/350	1,8 + L/350	2,0 + L/350
Dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.1x25:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	5	5	5	5

ZEISS DotScan
Measuring rang 3 mm ²⁾



Optical confocal white light distance sensor on RDS-D CAA,
Scanning measuring rate up to 1000 points/s, Working distance 21,5 mm, resolution 36 nm,
measurable surface inclination to beaming direction 90° ±24° ¹⁾, measuring spot diameter 9 µm

				7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	2,0 + L/350	2,1 + L/350	2,1 + L/350	2,3 + L/350
Dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.1x25:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	5	5	5	5

ZEISS DotScan
Measuring rang 10 mm ²⁾













Optical confocal white light distance sensor on RDS-D CAA,
Scanning measuring rate up to 1000 points/s, Working distance 55 mm, resolution 60 nm,
measurable surface inclination to beaming direction 90° ±17° ¹⁾, measuring spot diameter 16 µm

				7/7/6 7/10/6	9/12/6 9/18/6	9/12/8 9/18/8	12/18/8 12/24/8
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	3,0 + L/350	3,1 + L/350	3,1 + L/350	3,3 + L/350
Dimension probing error MPE complies with ISO 10360-8:2013	P[Size.Sph.1x25:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	5	5	5	5

1) Depending on the reflection behavior of the surface.

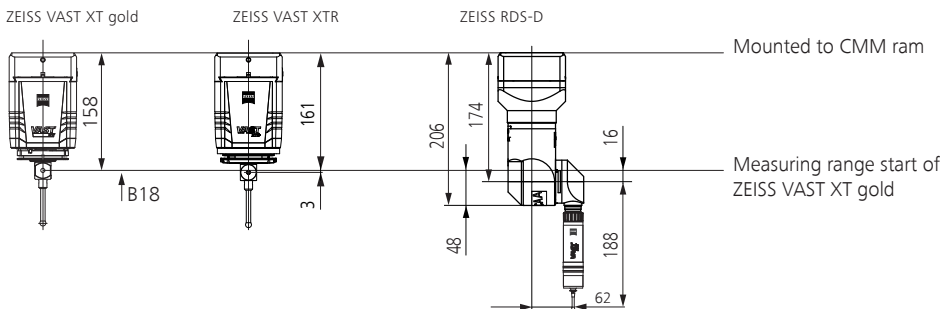
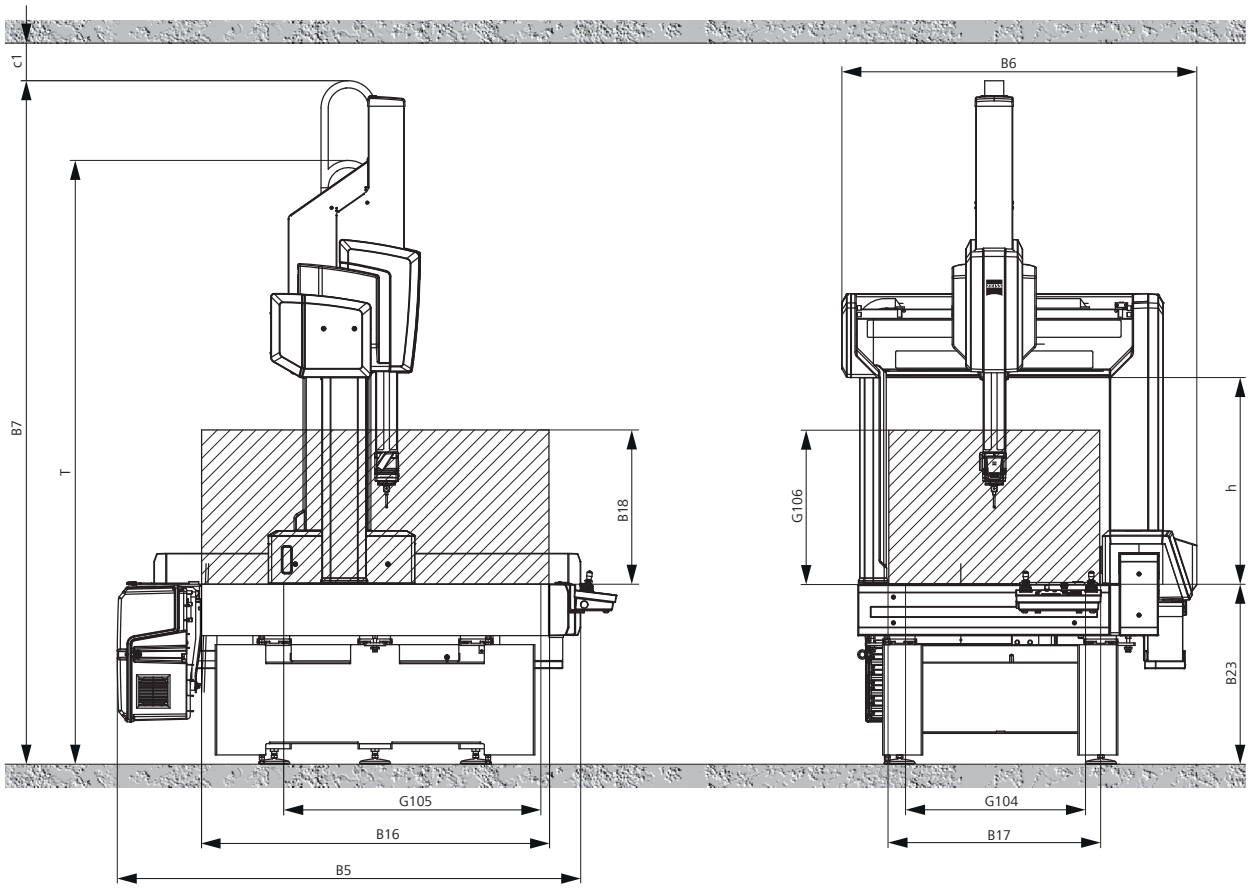
2) The use of optical probes requires calibration with contact probe (e.g. ZEISS VAST XXT).

Sensor overview

	active		direct		RDS					
					contact		optical			
	VAST XT gold	VAST XTR gold	VAST XXT	XDT						
Multipoint	■	■	■	■	■	■				
Passive scanning			■		■					
Active scanning	■	■								
Optical scanning							■	■	■	
Rotatable / tiltable					■	■	■	■	■	
Max. stylus length ¹⁾	500 mm	350/500 mm	250 mm	150 mm ³⁾	250 mm	150 mm ³⁾				
Max. stylus weight ¹⁾	500 g	500 g	15 g ²⁾	15 g ³⁾	15 g ²⁾	15 g ³⁾				
Navigator	■	■								

1) Depending on the application, limiting the parameters for a stylus system may be useful.
 2) ZEISS VAST XXT: depending on model. TL 3: 30 - 150mm 15g, TL4: 125 - 250mm 10g.
 3) Only TL3

ZEISS CONTURA sizes	Dimensions in mm													Weight in kg	
	Measuring range			Overall CMM dimensions			Working range (Max. workpiece size)			Table height	As-sembly space	Transport height ²	CMM	Max. workpiece	
	X axis	Y axis	Z axis	Length	Width	Height	Length	Width	Height	Height	Height	Height	Height	Height	
	G104	G105	G106	B5	B6	B7	B16	B17	B18	h	B23	c1	T		
7/7/6	700	700	600 ¹⁾	1603 1503 ³⁾	1381	2658	1050	827	660 ¹⁾	804	700	≥200	2348	1200	730
7/10/6	700	1000	600 ¹⁾	1913 1813 ³⁾	1381	2658	1350	827	660 ¹⁾	804	700	≥200	2348	1570	730
9/12/6	900	1200	600 ¹⁾	2213 2103 ³⁾	1581	2658	1650	1027	660 ¹⁾	804	700	≥200	2348	2280	1200
9/18/6	900	1800	600 ¹⁾	2911 2703 ³⁾	1581	2658	2250	1027	660 ¹⁾	804	700	≥200	2348	2960	1200
9/12/8	900	1200	800 ¹⁾	2213 2103 ³⁾	1581	3060	1650	1027	860 ¹⁾	1004	700	≥200	2650	2300	1200
9/18/8	900	1800	800 ¹⁾	2911 2703 ³⁾	1581	3060	2250	1027	860 ¹⁾	1004	700	≥200	2650	2980	1200
12/18/8	1200	1800	800 ¹⁾	2911 2703 ³⁾	1881	3060	2250	1327	860 ¹⁾	1004	700	≥200	2650	3380	1200
12/24/8	1200	2400	800 ¹⁾	3631 3301 ³⁾	1881	3060	2850	1327	860 ¹⁾	1004	700	≥200	2650	4900	1200



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) Applies to ZEISS VAST XT gold. The measuring range (G106) and the maximum workpiece height (B18) are reduced by at least 50 mm when other probes are used.
- 2) Transport height of the secured machine group without pallet or Z mast.
- 3) Without HTG / Bellows Option

Technical features

Length measuring system	Photoelectric reflected light system, 0.08 µm resolution
Controller	Type: ZEISS C99m Protection type: IP53
Accessories (optional)	Multi-sensor Rack for storage of stylus systems

Environmental requirements ²⁾

Relative humidity	40 % - 70% (without condensation)		
Measuring reference temperature	X700/X900/X1200	Option HTG	
	18 °C - 22 °C	18 °C - 26 °C	
	Per day:	1.5 K/d	1.5 K/d
	Per hour:	1.0 K/h	1.0 K/h
Spatial:	1.0 K/m	1.0 K/m	
Floor vibrations	ZEISS CONTURA is equipped with standard vibration damping (limits upon request). Upon request, we can provide assistance for vibration studies.		





Readiness for operation

Relative humidity	40 % - 70 % (without condensation)	
Ambient temperature	17 °C - 35 °C	
Power rating	ZEISS C99m	100-240V VAC ~ (±10 %); 50-60 Hz (±3.5 %) Max. power consumption: 800 VA Typical power consumption: 200 W Amount of heat generated: max. 2200 kJ/h
Compressed air supply	Supply pressure min. 6 bar, max. 8 bar, pre-cleaned. Max. consumption 80Nl/min for ZEISS CONTURA. The use of the AirSaver included with delivery ensures that compressed air is not used during ZEISS CONTURA downtimes, thus enabling environmentally friendly operations. Air quality complies with ISO 8573-1:2010 [6:4:4], Particle: class 6; Water/Oil: class 4 Particle, class 6: max. particle size 15 µm, max. dirt particle concentration ≤ 5mg/m ³ Water, class 4: max. compressed air dew point +3°C Oil, class 4: 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.	

System description

Type according to ISO 10360-1:2000	Moving bridge CMM		
Operating mode	motorized / CNC		
Sensor mounts	Fixed installation		
Software	ZEISS CALYPSO, ZEISS GEAR PRO, ZEISS HOLOS		
Travel speed	Motorized	Axes	0 to 70 mm/s
	CNC	Vector	max. 475 mm/s
Acceleration		Vector	max. 1.85 m/s ²
Scanning speed ¹⁾			max. 150 mm/s

Approvals

Regulations	ZEISS CONTURA complies with EC machine directive 2006/42/EC, 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

1) For ZEISS CONTURA with activ probe head and navigator function.

2) To ensure specified accuracies.

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

Internet: 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

Internet: www.zeiss.com/metrology