



ZEISS O-INSPECT

Specifications

Version: 2021-05



Seeing beyond

System description

Type according to ISO 10360-1:2000	O-INSPECT 3/2/2: Column CMM, O-INSPECT 5/4/3 and 8/6/3: Fixed bridge CMM					
Operating mode	motorized / CNC					
Sensor mounts	Fixed installation					
Sensors	ZEISS VAST XXT (contact) Scanning and single point sensor. Measuring speed with ZVp (ZEISS VAST probing) appr. 1.2 seconds per single point and 2.3 seconds per single point without ZVp. ZEISS Discovery.V12 (optical)					
Software	ZEISS CALYPSO, ZEISS GEAR PRO (option)					
				3/2/2	5/4/3	8/6/3
Travel speed	Motorized	in mm/s	Axes	0 to 100	0 to 100	0 to 100
	CNC	in mm/s	X, Y, Z axes	300/300/100	300/300/100	300/150/100
		in mm/s	Vector	435	435	350
Acceleration		in mm/s ²	X, Y, Z axes	500/500/500	500/500/500	500/200/500
		in mm/s ²	Vector	866	866	735

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 XXT ¹⁾



Scanning and single point sensor.

Up to 500 points per seconds in scanning mode. Max. stylus speed 5 mm/s.

VAST XXT TL1: Axial stylus length 30 - 125 mm; radial stylus length up to 40 mm (star stylus); stylus tip diameter of 0.1 to 8 mm, maximum stylus weight = 10 g;

VAST XXT TL3: Axial stylus length 30 - 150 mm; radial stylus length up to 65 mm (star stylus); stylus tip diameter of 0.3 to 8 mm, maximum stylus weight = 15 g;

				3/2/2	5/4/3	8/6/3
Length measurement error ^{2) 3)} MPE complies with ISO 10360-2:2009	E0 X/Y/Z (1D)	in µm	18 °C - 22 °C	1.6 + L/200	1.4 + L/250	1.5 + L/250
	E0 XY (2D)	in µm	18 °C - 22 °C	1.9 + L/150	1.6 + L/250	1.8 + L/250
	E0 (3D)	in µm	18 °C - 22 °C	2.4 + L/150	1.9 + L/250	2.2 + L/250
Example: Extended temperature range (ZEISS TVA 1)	E0 (3D)	in µm	18 °C - 26 °C	2.7 + L/150	2.2 + L/100	2.5 + L/100
Example: Extended temperature range (ZEISS TVA 2)	E0 (3D)	in µm	18 °C - 30 °C	2.9 + L/150	2.4 + L/80	2.7 + L/80
Repeatability range MPL complies with ISO 10360-2:2009	R0	in µm		1.2	1.2	1.2
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	18 °C - 22 °C	2.7	2.7	2.7
Required measuring time MPT	τ	in s	18 °C - 22 °C	55	55	55
Form measurement error ⁵⁾ MPE for roundness complies with ISO 12181 (VDI/DE 2617, sheet 2.2)	RONt (MZCI)	in µm	18 °C - 22 °C	2.4	2.4	2.4
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm	18 °C - 22 °C	2.4	1.9	2.2
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM ⁴⁾	in µm	18 °C - 22 °C	4.8	4.8	4.8
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM ⁴⁾	in µm	18 °C - 22 °C	1.2	1.2	1.2
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM ⁴⁾	in µm	18 °C - 22 °C	2.9	2.9	2.9

- 1) ZEISS VAST XXT: acceptance test with TL3 module; stylus length of 70 mm and stylus tip diameter of 8 mm.
- 2) Measuring length L in mm with acceptance testing plate from ZEISS.
- 3) All accuracy specifications of the sensors can be increased by + 0,3 µm for TVA 1 and + 0.5 µm for TVA 2.
- 4) Measuring location near the calibration position to document sensor properties.
- 5) Filter used: 50 W/U; scanning speed for roundness: 5 mm/s, value valid XY direction

Sensors and accuracy

ZEISS Discovery.V12 ¹⁾



Optical 2D camera sensor, CMOS Monochrom camera with GigE Vision interface, 2,35 MP, 1/1,2" chip, measuring speed up to 50 frames/s, with image processing functionality and autofocus, 12x zoom, 10 fixed zoom levels, max. probing speed 10 mm/s (Z-axis), laser pointer.

Illumination: Coaxial LED bright field top light in red and blue, back light.

standard 100 ³⁾: working distance 87 mm, 0.5 x - 6.3 x, sensor resolution 0.9 µm, FoV max.: 16,1 mm x 12,0 mm, 8 segment LED ring top light each in red and blue

scout 160 ⁴⁾: working distance 55 mm, 0.8 x - 10 x, sensor resolution 0.6 µm, FoV max.: 10,1 mm x 7,5 mm, 8 segment LED ring top light each in red and blue

scout 240 ⁵⁾: working distance 30 mm, 1.2 x - 15 x, sensor resolution 0.4 µm, FoV max.: 6,7 mm x 5,0 mm, no ring top light available

				3/2/2	5/4/3	8/6/3
Length measurement error ^{2) 8)} MPE complies with ISO 10360-7:2011	EU XY (1D) ^{3) 4) 5)}	in µm	18 °C - 22 °C	1.6 + L/200	1.4 + L/250	1.5 + L/250
	EU XY (2D) ^{3) 4) 5)}	in µm	18 °C - 22 °C	1.9 + L/150	1.6 + L/250	1.8 + L/250
Repeatability range (of EU - MPL complies with ISO 10360-7:2011)	RU XY (2D) ^{3) 4) 5)}	in µm	18 °C - 22 °C	1.2	1.2	1.2
Repeatability range (of EUZ L = 0 mm - MPL complies with ISO 10360-7:2011)	RUZ ³⁾	in µm	18 °C - 22 °C	1.9	1.9	1.9
	RUZ ⁴⁾			1.7	1.7	1.7
	RUZ ⁵⁾			1.5	1.5	1.5
Probing error MPE complies with ISO 10360-7:2011	PF2D ^{3) 4) 5)}	in µm	18 °C - 22 °C	1.9	1.6	1.8
Probing error of the image processing system MPE complies with ISO 10360-7:2011	PFV2D ³⁾	in µm	18 °C - 22 °C	1.2	1.2	1.2
	PFV2D ⁴⁾			1.1	1.1	1.1
	PFV2D ⁵⁾			1.0	1.0	1.0

Optical white light distance sensor ¹⁾ for ZEISS O-INSPECT 3/2/2, 5/4/3, 8/6/3

ZEISS DotScan

Measuring range 1 mm ⁶⁾



White light distance sensor,

Scanning measuring rate up to 1000 points/s, Working distance 10,5 mm ⁷⁾, resolution 28 nm, measurable surface inclination to beaming direction 90° ±30° ⁶⁾, measuring spot diameter 8 µm

Unidirectional length measurement error ⁸⁾ MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	1.9 + L/150
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

ZEISS DotScan

Measuring range 3 mm ⁶⁾



White light distance sensor,

Scanning measuring rate up to 1000 points/s, Working distance 21,5 mm ⁷⁾, resolution 36 nm, measurable surface inclination to beaming direction 90° ±24° ⁶⁾, measuring spot diameter 9 µm

Unidirectional length measurement error ⁸⁾ MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	2.2 + L/150
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

ZEISS DotScan

Measuring range 10 mm ⁶⁾



White light distance sensor,

Scanning measuring rate up to 1000 points/s, Working distance 55 ⁷⁾ mm, resolution 60 nm, measurable surface inclination to beaming direction 90° ±17° ⁶⁾, measuring spot diameter 16 µm

Unidirectional length measurement error ⁸⁾ MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in µm	18 °C - 22 °C	3.2 + L/150
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

1) Laser class 1: EN (IEC) 60825-1:2002.

2) Measuring length L in mm with acceptance testing plate from ZEISS.

3) standard 100, 6.3x magnification.

4) scout 160, 10x magnification.

5) scout 240, 15x magnification.

6) Depending on the reflection behavior of the surface.

7) To middle of measuring range.

8) All accuracy specifications of the sensors can be increased by + 0.3 µm for TVA 1 and + 0.5 µm for TVA 2.

Rotary table ¹⁾ for ZEISS O-INSPECT 5/4/3 and 8/6/3

Dimensions and weight				
Masse		in kg		6.3
Measuring system	Resolution	in "		0,07
Working range	B12 With a vertical RT axis	in mm in mm		165
Hight	h2 With a horizontal RT axis	in mm in mm		135
Centre height with horizontal RT axis		in mm		100
Max. workpiece diameter		in mm		150
Dynamics				
Max. angular velocity		in °/s		50
Rotation speed		in min ⁻¹		8.3
Load/moment				
Moment of tilt		in Nm in Nm	horizontal vertical	max. 2 centric
Max. centering capacity ²⁾		in kg	vertical	9
Max. mass moment of inertia		in kgm ²		0.1
Tilt rigidity		in Nm/°		1
Available drive torque	M	in Nm		3
Max. external torque acting on the rotary axis		in Nm		3
Max. distance of the load	to the jaw chuck	in mm		100 by approx. 1.5 kg
Accuracy ³⁾				
Angular position repeatability		in "	18 °C - 22 °C	±0.75
Axial runout MPE complies with ISO 10360-3:2000	FA	in µm	18 °C - 22 °C	6
Radial runout MPE complies with ISO 10360-3:2000	FR	in µm	18 °C - 22 °C	6
Wobble MPE complies with ISO 10360-3:2000	FT	in µm	18 °C - 22 °C	6

1) Optionally available.

2) Max. centric load capacity refers to the weight of the workpiece and any additional clamping devices required.

3) The rotary table specifications only apply when using original ZEISS 3D Alpha-Check for RT-RB-10-n, Δ h = 25 mm, r = 25 mm. A standard according to the specifications of ISO 10360-3:2000 is not possible due to its design.

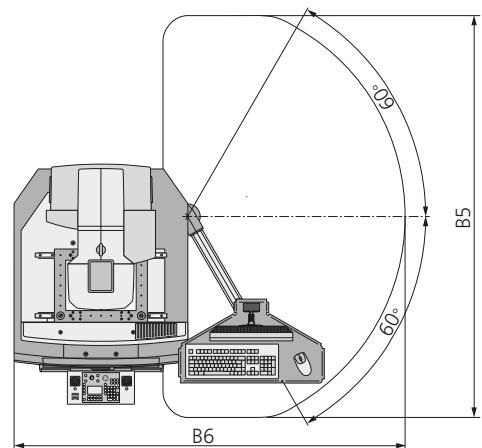
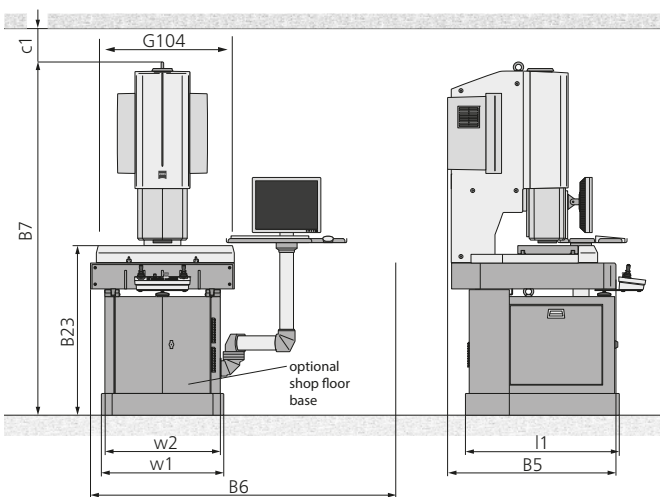
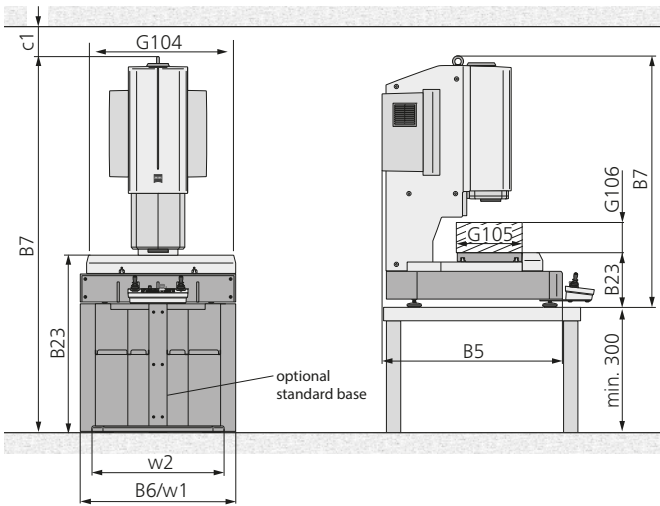
ZEISS O-INSPECT 3/2/2

Dimensions in mm

	Measuring range			Stylus data geometry			Overall machine dimensions			Working range (Max. workpiece size)			
	X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery V12	White light distance sensor		Width	Length	Height	Width	
	G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
Basic model	300	200	200	0	0	74.0	0	176	0	865 ¹⁾	1000 ²⁾	1405	∞
With standard base	300	200	200	0	0	74.0	0	176	0	865 ¹⁾	1000 ²⁾	2080	∞
With shopfloor base	300	200	200	0	0	74.0	0	176	0	approx. 1935	1960 ²⁾	2115	∞

Dimensions in mm

	Footprint			Table height	Assembly clearance	Weight in kg	
	Width		Length			Max. workpiece	Measuring machine
	w1	w2 ³⁾	l1	B23	c1		
Basic model	865	765	1000	305	≥200	20	325
with standard base	865	740	1021	980	≥200	20	440
With shopfloor base	732	-	920	1015	≥200	20	490



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) plus 2 x 500 mm assembly clearance.
- 2) plus 240 mm for control panel storage and 500 mm assembly clearance.
- 3) With disassembly of the cover parts during installation.

ZEISS O-INSPECT 5/4/3

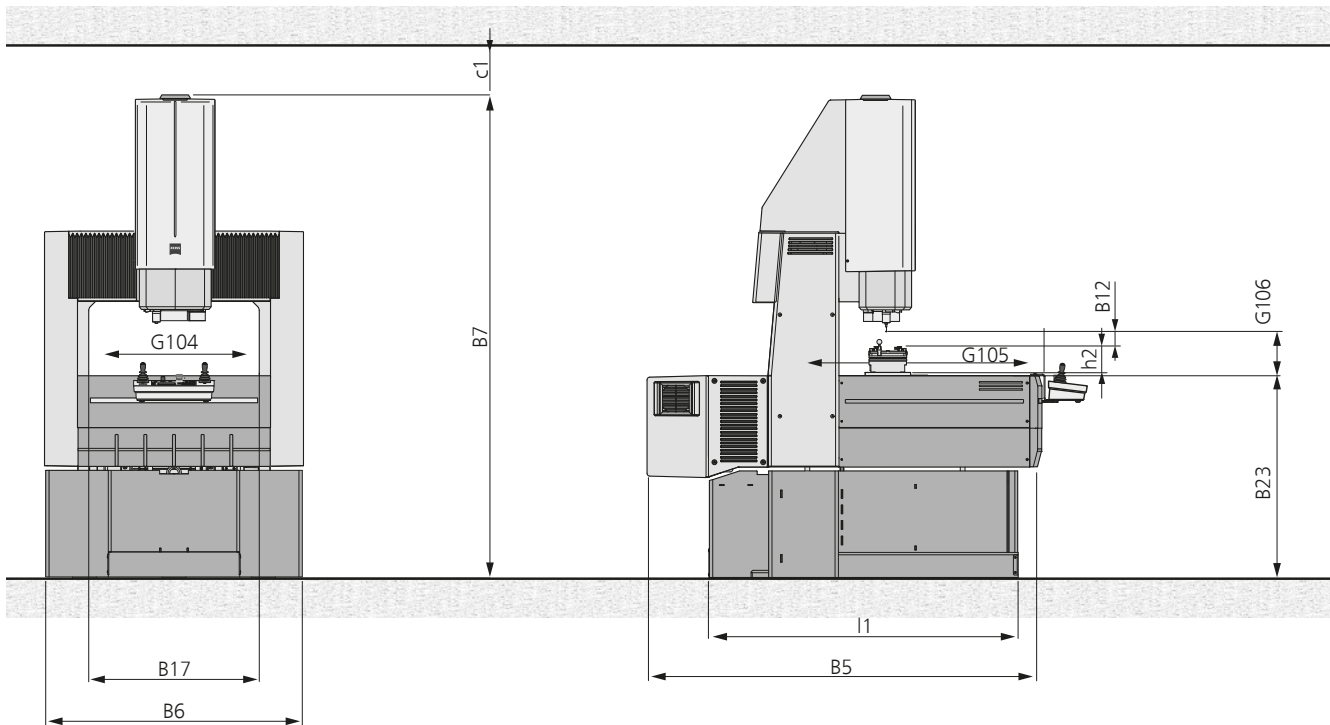
Measuring range			Stylus data geometry						Overall machine dimensions			Working range (Max. workpiece size)
X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery.V12		White light distance sensor		Width	Length	Height	Width
G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
500	400	300	0	0	74.0	0	176	0	1090 ¹⁾	1653 ²⁾	2030	700

Dimensions in mm				Weight in kg			
Footprint		Table height	Assembly clearance	Max. workpiece		Measuring machine	Base
Width	Length						
B6	l1	B23	c1				
1090	1295	850	≥200		25	600	150

ZEISS O-INSPECT 8/6/3

Measuring range			Stylus data geometry						Overall machine dimensions			Working range (Max. workpiece size)
X axis	Y axis	Z axis	ZEISS VAST XXT		ZEISS Discovery.V12		White light distance sensor		Width	Length	Height	Width
G104	G105	G106	X	Y	X	Y	X	Y	B6	B5	B7	B17
800	600	300	0	0	74.0	0	176	0	1440 ¹⁾	2144 ²⁾	2030	1060

Dimensions in mm				Weight in kg			
Footprint		Table height	Assembly clearance	Max. workpiece		Measuring machine	Base
Width	Length						
B6	l1	B23	c1				
1440	1591	850	≥200		100	1000	200



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) plus 2 x 500 mm assembly clearance.
- 2) plus 200 mm for control panel storage and 500 mm assembly clearance.

Requirements for operational readiness

Relative humidity	40 % - 70% (without condensation)		
Environmental temperature	17°C - 35°C		
Electrical power rating	3/2/2	5/4/3	8/6/3
	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 130 W Amount of heat generated max. 2160 kJ/h	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 130 W Amount of heat generated max. 2160 kJ/h	1/N/PE 100 - 240V~(+10%); 50-60 Hz max. power consumption 600 VA Typical power consumption (thermal load): 130 W Amount of heat generated max. 2160 kJ/h

Environmental requirements

	3/2/2	5/4/3	8/6/3
Permissible humidity (without condensation)	40 % - 70 %	40 % - 70 %	40 % - 70 %
Environmental temperature	18 °C - 22 °C	18 °C - 22 °C	18 °C - 22 °C
Temperature fluctuations			
per day	2.0 K/d	2.0 K/d	2.0 K/d
per hour	1.0 K/h	1.0 K/h	1.0 K/h
spatial	1.0 K/m	1.0 K/m	1.0 K/m
Floor vibrations	ZEISS O-INSPECT is equipped with an integrated vibration damping system and is therefore highly resistant to vibrations.		

Technical features

	3/2/2	5/4/3	8/6/3
Length measurement system	Optical scales; reflected light system, photoelectric, resolution 0.08 µm	Optical scales; reflected light system, photoelectric, resolution 0.08 µm	Optical scales; reflected light system, photoelectric, resolution 0.08 µm
Controller			
Type	based on ZEISS C99m	based on ZEISS C99m	based on ZEISS C99m
Protection type	IP53	IP53	IP53
Data technology	Delivered with a fully equipped workstation.	Delivered with a fully equipped workstation.	Delivered with a fully equipped workstation.
Accessories (optional)	Star stylus kit, part clamping set, pallet frame, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination, standard base, ShopFloor base	Star stylus kit, part clamping set, pallet frame, rotary table, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination	Star stylus kit, part clamping set, pallet frame, rotary table, optical confocal white light distance sensor, workpiece temperature sensor, measuring lab illumination

Approvals

Regulations ZEISS O-INSPECT complies with EC machinery 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.

Certifications/accreditations

Quality management system	ISO 9001:2015; VDA 6, Parts 4, 3. Issue 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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