



ZEISS PRISMO®

Specifications

Version: November 2017



System description

Type as per ISO 10360-1:2000	Bridge-type CMM with a moveable bridge						
Operating mode	Motorized/CNC						
Sensor mounts	Fixed installation						
Software	ZEISS CALYPSO, ZEISS GEAR PRO, ZEISS HOLOS						
			ZEISS PRISMO 5+7 X=700 und X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600	ZEISS PRISMO ultra	
Travel speeds	Motorized	in mm/s	0 to 70	0 to 70	0 to 70	0 to 70	
	CNC	Axis	in mm/s	max. 300	max. 300	max. 300	max. 300
		Vector	in mm/s	max. 520	max. 520	max. 520	max. 520
	Scanning speed (with navigator technology)	in mm/s	max. 350	max. 350	max. 350	max. 350	
Acceleration	Axis	in m/s ²	max. 1.2	max. 1.2	max. 0.8	max. 0.38	
	Vector	in m/s ²	max. 1.87	max. 1.87	max. 1.38	max. 0.67	

ZEISS PRISMO ultra: sensors and accuracy⁵⁾

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 gold¹⁾



Active scanning and multi-point sensor.

Scanning measurement rate of up to 500 points/s. Variable measuring force of between 50 and 1000 mN for data transfer.

ZEISS VAST gold: stylus: max. length = 800 mm, max. weight = 600 g incl. stylus adapter, min. stylus tip diameter = 0.3 mm. With navigator and performance technology to increase measuring performance.

			ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600			
Length measurement error ²⁾ MPE complies with ISO 10360-2:2009	E0	in µm	20°C - 22°C	0.5 + L/500 µm	20°C - 22°C	1.2 + L/500 µm	20°C - 22°C	1.9 + L/400 µm
			-	-	20°C - 22°C	1.0 + L/500 ⁶⁾	20°C - 22°C	1.6 + L/400 ⁷⁾
	E150	in µm	20°C - 22°C	0.8 + L/500 µm	20°C - 22°C	1.6 + L/500 µm	20°C - 22°C	2.5 + L/400 µm
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm		0.4		0.7		0.8
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm		0.9		1.1		1.6
Required measuring time MPT	τ	in s		40		40		45
Form measurement error ³⁾ MPE for roundness complies with ISO 12181:2011 (VDI/DE 2617, sheet 2.2:2000)	RONt (MZCI)	in µm		0.5		0.7		0.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm		0.5		0.8		1.1
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM ⁴⁾	in µm		1.9		2.2		2.3
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM ⁴⁾	in µm		0.6		0.9		1.1
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM ⁴⁾	in µm		1.2		1.5		1.7

- 1) Acceptance test with a stylus length of 60 mm and a tip diameter of 8 mm. Also valid for other styli. Dia. 3 x 33 mm, dia. 5 x 50 mm and dia. 12 x 92 mm were tested with PRISMO ultra.
- 2) Measuring length L in mm.
- 3) Roundness in scanning operations on a 50 mm ring gauge with v 5 mm/sec, filter 50 UPR.
- 4) Measuring location near the calibration position to document sensor properties.
- 5) Accuracy in combination with the reference standard for the PRISMO ultra and the reference sphere bending correction.
- 6) In the limited measuring range 800/1000/600.
- 7) In the limited measuring range 800/1200/600.

ZEISS PRISMO: sensors and accuracy

The CMM specifications only apply when using original ZEISS accessories.

ZEISS VAST gold ¹⁾

Active scanning and multi-point sensor.

ZEISS VAST XTR gold ¹⁾

Scanning measurement rate of up to 500 points/s. Variable measuring force of between 50 and 1000 mN for data transfer.



ZEISS VAST gold: stylus: max. length = 800 mm, max. weight = 600 g incl. stylus adapter, min. stylus tip diameter = 0.3 mm.
ZEISS VAST XTR gold: max. length = 350 mm, max. weight = 500 g incl. stylus adapter, min. stylus tip diameter = 0.5 mm.
With navigator and performance technology to increase measuring performance.

			ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600			
Length measurement error ²⁾ MPE complies with ISO 10360-2:2009	E0/E150	in µm	19°C - 21°C	0.9 + L/350 ³⁾	18°C - 22°C	1.5 + L/350 µm	18°C - 22°C	2.0 + L/300 µm
			15°C - 30°C	1.2 + L/250 µm	18°C - 28°C	1.8 + L/300 ⁴⁾	18°C - 28°C	3.4 + L/270 ⁴⁾
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in µm		0.8		1.1		1.5
Scanning error MPE complies with ISO 10360-4:2000	THP	in µm	19°C - 21°C	1.3 (PRISMO 5)	18°C - 22°C	1.7	18°C - 22°C	2.5
				1.7 (PRISMO 7)				
Required measuring time MPT	τ	in s		40		40		40
Form measurement error ⁵⁾ MPE for roundness complies with ISO 12181:2011 (VDI/VDE 2617, sheet 2.2:2000)	RONt (MZCI)	in µm		1.0		1.3		1.9
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in µm		1.0		1.3		1.9
Multi-stylus form probing error MPE complies with ISO 10360-5:2010	PFTM ⁶⁾	in µm		2.1 (PRISMO 5)		2.7		2.9
				2.7 ⁷⁾		3.3 ⁷⁾		3.5 ⁷⁾
				2.4 (PRISMO 7)				
				3.0 ⁷⁾				
Multi-stylus dimension probing error MPE complies with ISO 10360-5:2010	PSTM ⁶⁾	in µm		1.0 (PRISMO 5)		1.4		1.6
				1.2 (PRISMO 7)				
Multi-stylus location probing error MPL complies with ISO 10360-5:2010	PLTM ⁶⁾	in µm		1.6 (PRISMO 5)		2.0		2.1
				1.7 ⁷⁾		2.1 ⁷⁾		2.2 ⁷⁾
				1.8 (PRISMO 7)				
				1.9 ⁷⁾				

1) Acceptance test with a stylus length of 60 mm and a tip diameter of 8 mm. Also valid for other styli. Dia. 3 x 33 mm, dia. 5 x 50 mm, dia. 8 x 114 mm and dia. 12 x 92 mm were tested with PRISMO (in conjunction with the reference standards belonging to the CMM).

2) Measuring length L in mm.

3) 1.2 + L/350 at 18°C - 22°C.

4) ZEISS PRISMO 10 (Y > 2400) 18°C - 24°C.

5) Roundness in scanning operations on a 50 mm ring gauge with v 5 mm/sec, filter 50 UPR.

6) Measuring location near the calibration position to document sensor properties.

7) Applies to ZEISS VAST XTR gold.

ZEISS RDS sensors and accuracy for ZEISS PRISMO and ZEISS PRISMO ultra

The CMM specifications only apply when using original ZEISS accessories.

ZEISS RDS-D



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

Lateral swivel axis offers more benefits than articulating systems 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° , CAA correction to automatically qualify measuring multi-point sensors of all potential 20,736 angular positions.

ZEISS VAST XXT ¹⁾



Scanning and multi-point sensor on ZEISS RDS-D. Scanning measurement rate of up to 500 points/s, max. sensor extension = 100 mm

Stylus length with module: TL1 and TL3 = 30 - 150 mm, TL4 = 125 - 250 mm

Max. sensor weight = 15 g, min. stylus tip diameter = 0.3 mm

				ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600
Length measurement error ²⁾ MPE complies with ISO 10360-2:2009	E0/E40	in μm	18°C - 22°C 18°C - 26°C	1.6 + L/350 μm 2.1 + L/300 μm	2.2 + L/300 μm 2.9 + L/250 μm	3.2 + L/250 μm 3.7 + L/200 ³⁾
Repeatability range of E0 MPL complies with ISO 10360-2:2009	R0	in μm		0.8	1.1	1.5
Scanning tolerance MPE complies with ISO 10360-4:2000	THP	in μm		2.5	3.5	3.5
Required measuring time MPT	τ	in s		50 ⁹⁾	68	68
Form measurement error ⁴⁾ MPE for roundness complies with ISO 12181 (VDI/VDE 2617, sheet 2.2)	RONt (MZCI)	in μm		1.7	1.9	3.0
Single stylus form probing error MPE complies with ISO 10360-5:2010	PFTU	in μm		1.7	1.9	3.0

ZEISS ViScan ⁵⁾



Optical 2D image sensor with autofocus on RDS-D.

Working distance (depending on lens): 75 - 90 mm.

				ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600
Length measurement error ²⁾ MPE complies with ISO 10360-7:2011	E0 (XY)	in μm		10 ⁶⁾ + L/350	10 ⁶⁾ + L/300	10 ⁶⁾ + L/250
Image processing system probing error MPE complies with ISO 10360-7:2011	PFV2D	in μm		10 ⁶⁾	10 ⁶⁾	10 ⁶⁾

ZEISS LineScan ^{5) 8)}



Optical laser triangulation scanner on ZEISS RDS-D.

				ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600
8 mm working range 32 mm working distance						
Probing error ⁷⁾ MPE complies with ISO 10360-8:2013	PF (UT)	in μm		2.9	2.9	2.9
Dispersion on sphere	1 Sigma	in μm		0.9	0.9	0.9
25 mm working range 63 mm working distance						
Probing error ⁷⁾ MPE complies with ISO 10360-8:2013	PF (UT)	in μm		12	12	12
Dispersion on sphere	1 Sigma	in μm		4	4	4
50 mm working range 94 mm working distance						
Probing error ⁷⁾ MPE complies with ISO 10360-8:2013	PF (UT)	in μm		20	20	20
Dispersion on sphere	1 Sigma	in μm		5	5	5
100 mm working range 220 mm working distance						
Probing error ⁷⁾ MPE complies with ISO 10360-8:2013	PF (UT)	in μm		50	50	50
Dispersion on sphere	1 Sigma	in μm		12	12	12

1) Specifications for ZEISS VAST XXT, TL1: l = 50, dia. 3 mm; TL3: l = 60, dia. 5 mm; TL4: l = 125, dia. 3 mm.

2) Measuring length L in mm.

3) ZEISS PRISMO 10 (Y > 2400) 18°C - 24°C.

4) Roundness in Scanning Mode for V-Scan = 5 mm/s, filter 50 UPR

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

6) All specifications measured with ZEISS ViScan 1x lens.

7) Probing error in the center of the measuring range on a suitable sphere (30 mm diameter) with a matte surface. P[Form.Sph.D95 %:Tr:ODS]

The working distance information is based on the center of the measuring range.

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

9) 68 s with ZEISS PRISMO ultra.

ZEISS DotScan
Measuring range 1 mm



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

				ZEISS PRISMO 5 + 7 X=700 and X=900	ZEISS PRISMO 10 X=1200	ZEISS PRISMO 10 X=1600
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in μm	18 °C - 22 °C	1.6 + L/350	2.2 + L/300	3.4 + L/250
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

ZEISS DotScan
Measuring range 3 mm



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

				9/12/8 to 9/16/8	12/18/8 to 12/42/10	16/24/10 to 16/42/10
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in μm	18 °C - 22 °C	1.9 + L/350	2.5 + L/300	3.7 + L/250
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

ZEISS DotScan
Measuring range 10 mm



Optical confocal white light distance sensor on RDS-D CAA,
Scanning measuring rate up to 1000 points/s,
Working distance 50 mm, resolution 60 nm,
measurable surface inclination to beaming direction $90^\circ \pm 17^\circ$ ¹⁾, measuring spot diameter 16 μm

				9/12/8 to 9/16/8	12/18/8 to 12/42/10	16/24/10 to 16/42/10
Unidirectional length measurement error MPE complies with ISO 10360-8:2013	E[Uni:Tr:ODS] in sensor direction	in μm	18 °C - 22 °C	2.9 + L/350	3.5 + L/300	4.7 + L/250
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

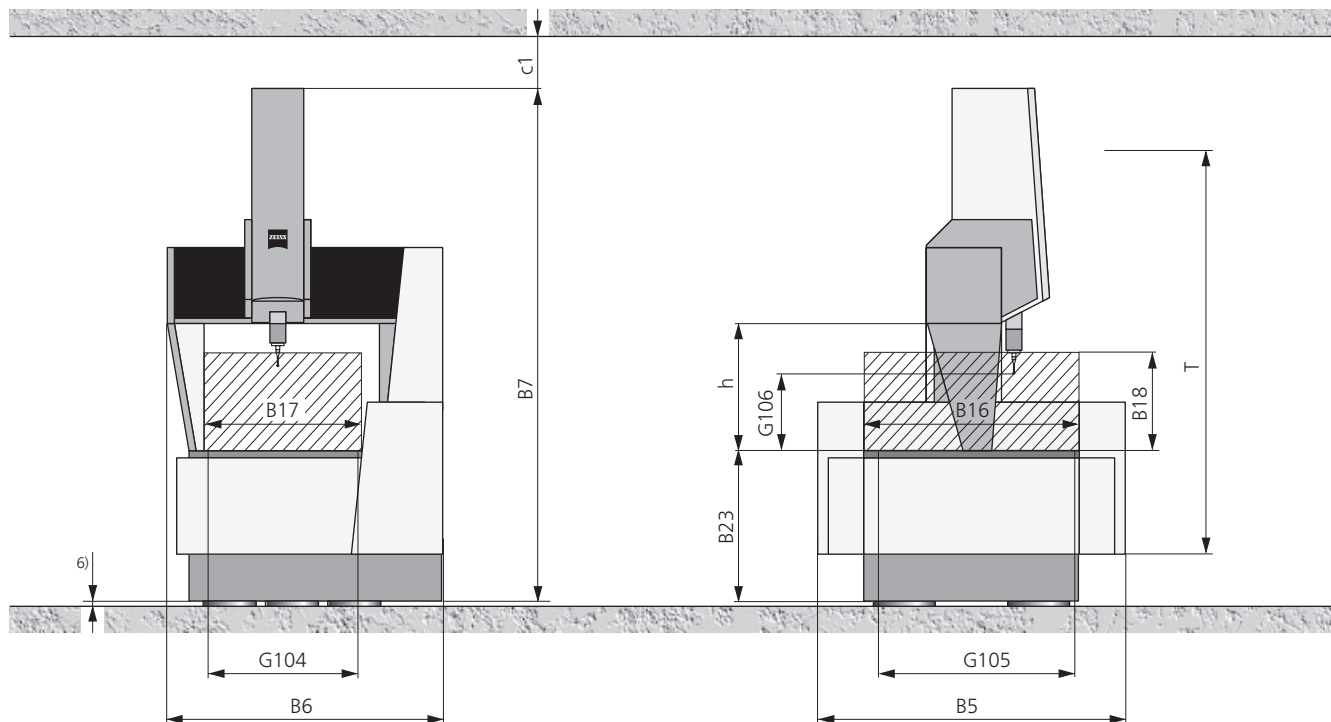
Sensor overview

	VAST XTR gold ¹⁾	RODOS	VAST gold	VAST XXT	ViScan	LineScan	DotScan	RDS
Multi-point	■		■	■	■			
Min. probing force	50 mN		50 mN					
Measuring rate				■				
Passive scanning				■				
Active scanning	■		■					
Optical scanning					■	■	■	
Roughness measurement		■						
Rotatable/ tiltable		■		■	■	■	■	
Max. stylus length ³⁾	350 mm		800 mm	250 mm ²⁾				
Max. stylus weight (incl. adapter plate) ³⁾	500 g		600 g	15 g ²⁾				
Smallest stylus tip diameter ³⁾	0,5 mm		0,3 mm	0,3 mm				

1) Only for PRISMO - not for ZEISS PRISMO ultra
 2) ZEISS VAST XXT: depending on module (TL1, TL3 or TL4).
 3) Depending on the application, limiting the parameters for a stylus configuration may be useful.

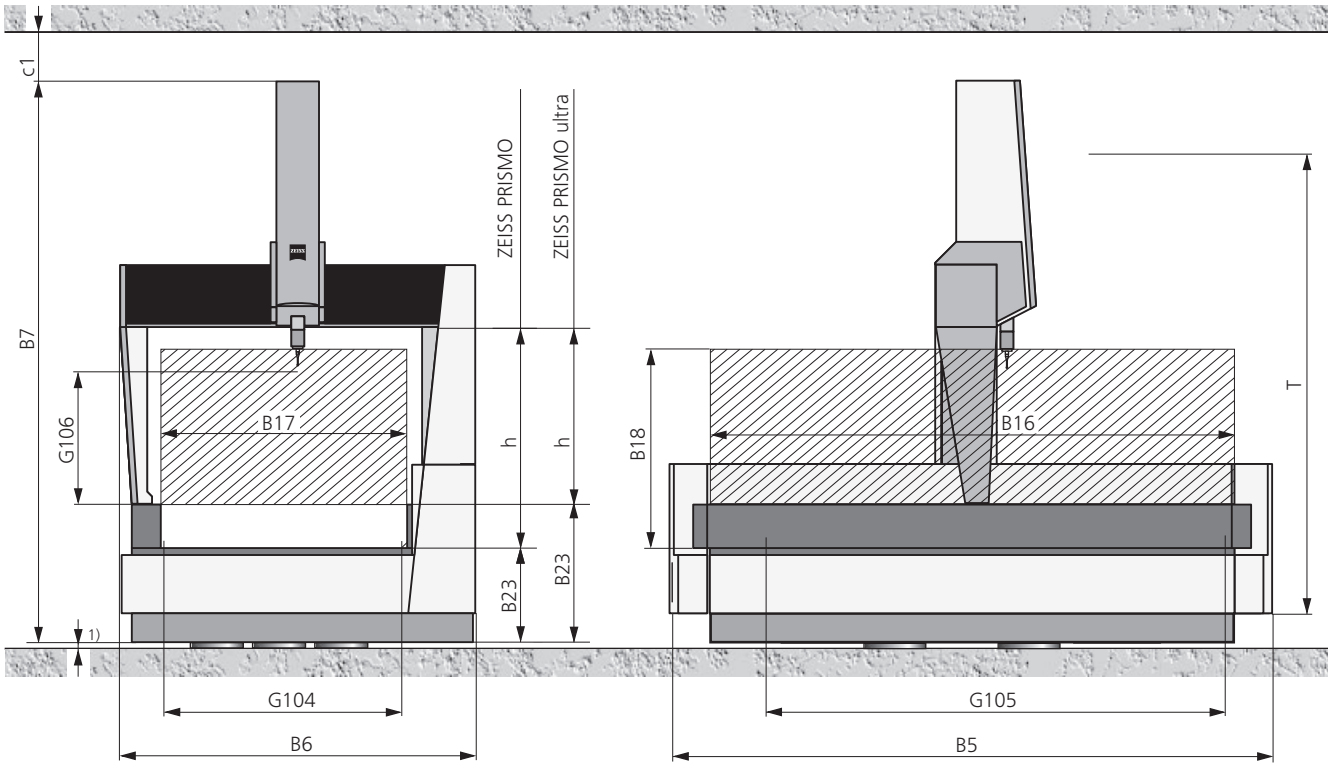
ZEISS PRISMO Sizes	Dimensions in mm													Weight in kg	
	Measuring range			Overall CMM dimensions			Working range (max. workpiece size)				Table height	Assembly space	Trans- port height	Machine	Work- piece
	X axis	Y axis	Z axis	Width	Length	Height	Width	Length	Height	Height	Height	Height	Height		
G104	G105	G106 ⁴⁾	B6	B5	B7	B17	B16	B18 ⁵⁾	h	B23 ¹⁾	c1	T			
ZEISS PRISMO ultra															
7/10/5	700	1000	500	1557	2040	2930	896	1520	605	720	880	150	2560	3120	1000
9/13/7	900	1300	650	1733	2340	3050	1070	1820	705	820	880	150	2410	2950	1000
12/18/10	1200	1800	1000	2050	2940	3520	1416	2420	1079	1220	595	200	2660	6000	1500
12/24/10	1200	2400	1000	2050	3540	3550	1416	3220	1079	1220	595	200	2660	7250	2000
16/24/10	1600	2400	1000	2450	3540	3860	1700	3020	1147	1293	877	200	3050	13360	4000
16/30/10	1600	3000	1000	2450	4140	3860	1700	3620	1147	1293	877	200	3050	15750	4000
ZEISS PRISMO															
7/9/5	700	900	500	1568	1750	2960	885	1220	585	710	860	150	2210	1700	1200
7/9/7	700	900	650	1568	1750	3040	885	1220	695	810	860	150	2360	1800	1200
9/12/7	900	1200	650	1743	2050	3060	1060	1520	695	810	860	150	2360	2300	1300
9/15/7	900	1500	650	1743	2350	3060	1060	1820	695	810	860	150	2410	2950	1500
9/18/7	900	1800	650	1743	2650	3060	1060	2120	695	810	860	150	2410	3460	1500
9/24/7	900	2400	650	1743	3250	3060	1060	2720	695	810	860	150	2410	4740	2000
12/18/10	1200	1800	1000	2060	2950	3520 ²⁾	1406	2420	1069	1210	600 ²⁾	200	2660	6100	2000
														6200 ³⁾	5000 ³⁾
12/24/10	1200	2400	1000	2060	3550	3520 ²⁾	1406	3020	1069	1210	600 ²⁾	200	2660	7350	2500
														7450 ³⁾	5000 ³⁾
12/30/10	1200	3000	1000	2060	4150	3560	1406	3620	1069	1210	650	200	2660	9600	3500
														9700 ³⁾	5000 ³⁾
12/42/10	1200	4200	1000	2060	5350	3560	1406	4820	1069	1210	650	200	2660	13000	3500
														13100 ³⁾	5000 ³⁾
16/24/10	1600	2400	1000	2460	3540	3860	1690	3020	1369	1515	650	200	3050	11000	3500
16/30/10	1600	3000	1000	2460	4150	3860	1690	3620	1369	1515	650	200	3050	13000	3500
														13100 ³⁾	5000 ³⁾
16/42/10	1600	4200	1000	2460	5350	3860	1690	4820	1369	1515	650	200	3050	17000	3500
														17100 ³⁾	5000 ³⁾

From 7/9/5 to 12/42/10



Note: the given dimensions and weights are approximate values. Subject to change. Dimensioning based on DIN 4000-167:2009.

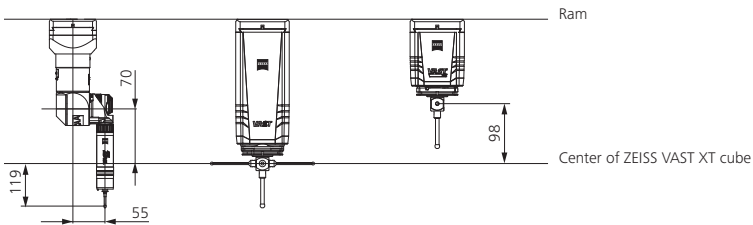
- 1) Deviations from the given values can occur depending on the subsoil properties.
- 2) Optional table height is 830 mm with base. The total height increases by 230 mm.
- 3) CMM with increased permissible workpiece weight option (NSP).
- 4) Specifications apply to ZEISS VAST gold with a stylus length of 60 mm and tip diameter of 8 mm.
- 5) Specifications apply to ZEISS VAST gold without adapter plate.
- 6) 5, 8 or 10 mm depending on the installation (mounted or embedded steel plates). You will find more information in the installation instructions.



1) 5, 8 or 10 mm depending on the installation (mounted or embedded steel plates). You will find more information in the installation instructions.

Size comparison of the sensors

ZEISS RDS Select Basis / ZEISS VAST gold ZEISS VAST gold ZEISS VAST XTR gold



Note: the given dimensions and weights are approximate values. Subject to change. Dimensioning based on DIN 4000-167:2009.

Technical features

Controller	Type	ZEISS C99 with USS 2.0 wiring
	Protection type	IP54
	Chiller	Fan
Clamping device	Flatness in accordance with DIN 876	
Data technology	The ZEISS PRISMO line comes standard with a fully equipped workstation.	
Accessories (optional)	Increased permissible workpiece weight, various controllers, multi-sensor rack, rotary table, form inspection package (PRISMO ultra)	
Scales	Glass ceramic. For Y >2400, steel scales (on ZEISS PRISMO) and automatic temperature capture are used.	
Resolution	0.02 µm for ZEISS PRISMO ultra, 0.2 µm for ZEISS PRISMO	

Ambient requirements

Temperature conditions to guarantee specified accuracy

	ZEISS PRISMO					ZEISS PRISMO ultra
	X=700 and 900	X=1200	X=1600	X=1200 and 1600		
Measuring reference temperature from	19°C - 21°C	15°C - 30°C	18°C - 22°C	18°C - 22°C	18°C - 26/28°C ¹⁾	20°C - 22°C
Per day	1.8 K/d	5 K/d	1.8 K/d	2 K/d	5 K/d	1 K/d
Per hour	0.8 K/h	2 K/h	0.8 K/h	1 K/h	2 K/h	0.5 K/h
Spatial	0.8 K/m	1 K/m	0.8 K/m	1 K/m	1 K/m	0.5 K/m
Floor vibrations	The ZEISS PRISMO ultra is equipped with active vibration damping. The ZEISS PRISMO is equipped with a vibration damping system featuring elastomer/viscous supports. Limiting curves also available. We can also conduct a vibration analysis upon request.					

Requirements for operational readiness

Relative humidity	40% to 70% (without condensation)
Ambient temperature	15°C - 35°C
Power rating	1/N/PE 100/110/115/120/125/230/240 V ~ (±10%); 50-60 Hz (±3.5%) Max. power consumption: 2500 VA Typical power consumption: 380 W
Compressed air supply	Supply pressure min. 6 bar, max. 8 bar, pre-cleaned. Consumption approx. 50 Nl/min. Air quality complies with ISO 8573, part 1: class 4. The use of the AirSaver included with delivery ensures that compressed air is not used during ZEISS PRISMO downtime, thus enabling environmentally friendly operation and saving resources.
Data technology	The ZEISS PRISMO line comes with a workstation or high-quality computer systems. Upon request, the system can also be equipped with components for connection to your in-house network.

Approvals

Directives ZEISS PRISMO complies with EC machine 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 safety management system	BS OHSAS 18001:2007
Accredited	ISO/IEC 17025:2005

1) ZEISS PRISMO 10 (Y >2400) 18°C-24°C with gradient: 1.8K/d, 0.8K/h, 0.8K/m.

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