



ZEISS CALENO

Specifications

Status: October 2018



System description

Type according to ISO 10360-1:2000	Moving ram horizontal-arm CMM		
Models	Single or duplex		
Operating mode	Motorized / CNC		
Sensor mounts	ZEISS RDS-C6-CAA, ZEISS DSC		
Software	ZEISS CALIGO, ZEISS HOLOS, I++		
Travel speed		Standard	With Option Performance
	Set-up mode with collision protection for sensor carrier (optional)	Axes 150 mm/s	150 mm/s
	CNC in batch measurement mode with full collision protection for the user	X axis 150 mm/s	150 mm/s
		Y axis	
		Z axis	
	CNC in batch measurement mode with optional safety light barrier	Vector 260 mm/s	260 mm/s
		X axis -	500 mm/s
		Y axis	
		Z axis	
		Vector -	866 mm/s
Acceleration		Axes max. 800 mm/s ²	max. 1000 mm/s ²
		Vector max. 1000 mm/s ²	max. 1500 mm/s ²

Accuracy and measuring performance ^{1) 3)}

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.

		16/25	16/30	18/21, 18/25	18/30
Length measurement error MPE complies with ISO 10360-2:2001	E in µm at 16°C - 24°C for single arm	27 + L/80 ≤70	40 + L/65 ≤105	37 + L/80 ≤90	55 + L/65 ≤125
Length measurement error MPE complies with ISO 10360-2:2001	EM in µm at 16°C- 24°C for dual arm	40 + L/60 ≤95	60 + L/45 ≤145	60 + L/60 ≤135	83 + L/45 ≤190
Probing error MPE complies with ISO 10360-2:2001	P in µm at 16°C - 24°C for single arm	25	30	30	35

Accuracy and measuring performance with HG option ²⁾

		16/25	16/30	18/21, 18/25	18/30
Length measurement error MPE complies with ISO 10360-2:2001	E in µm at 18°C - 22°C for single arm	18 + L/125 ≤50	25 + L/100 ≤70	30 + L/125 ≤70	35 + L/100 ≤80
Length measurement error MPE complies with ISO 10360-2:2001	EM in µm at 18°C- 22°C for dual arm	30 + L/80 ≤75	40 + L/65 ≤110	40 + L/80 ≤105	55 + L/65 ≤120
Probing error MPE complies with ISO 10360-2:2001	P in µm at 18°C - 22°C for single arm	20	25	25	30

Accuracy and measuring performance with HG option ³⁾

		16/25	16/30	18/21, 18/25	18/30
Length measurement error MPE complies with ISO 10360-2:2001	E in µm at 16°C - 24°C for single arm	25 + L/100 ≤60	35 + L/80 ≤90	35 + L/100 ≤80	45 + L/80 ≤110
Length measurement error MPE complies with ISO 10360-2:2001	EM in µm at 16°C- 24°C for dual arm	40 + L/70 ≤90	50 + L/55 ≤130	55 + L/70 ≤120	68 + L/55 ≤165
Probing error MPE complies with ISO 10360-2:2001	P in µm at 16°C - 24°C for single arm	20	25	25	30

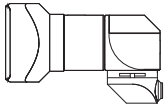
1) L = measuring length in mm. This data applies to the maximum length measuring error based on a length of no more than 6000 mm.

2) Temperature range T0

3) Temperature range T1

Sensor mounts

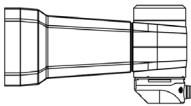
ZEISS RDS-C6 CAA



Dynamic ZEISS RDS-C6 CAA articulating unit for contact sensors.
The lateral tilting axis provides more advantages over articulating units with front-to-back and lateral tilting axis: tilting range of $\pm 180^\circ$, large measuring range.
With CAA correction for automatic calibration of all available angular settings. With collision protected probe plate.

Step width	2.5°
Angular velocity	up to 90°/s
Reproducibility of the position	$\pm 1''$
Maximum torque	50 Ncm
Max. extension	350 mm with ZEISS RST-P 350 mm (PECF) with Renishaw TP6 350 mm (PECF) with Renishaw TP20

ZEISS DSC



Dynamic ZEISS DSC continuous articulating unit for contact and optical sensors.
High torque for the use of optical sensors and long extensions.
This reduces the calibration times to a minimum.

Rotation axis A	n x 360°
Swivel axis B	$\pm 137,5^\circ$
Resolution	0.324" (continuous)
Angular velocity	up to 180°/s
Reproducibility of the position	<2"
Maximum torque	3.0 Nm
Max. Extension	800 mm

Sensors

Renishaw TP6



3D touch-trigger probe, manufactured by Renishaw

Length	41 mm
Diameter	25 mm
Measuring force	0.11 - 0.30 N
Stylus length	max. 50 mm
Stylus weight	max. 5 g

Renishaw TP20



3D touch-trigger probe, manufactured by Renishaw

Length	38 mm
Diameter	13.2 mm
Measuring force (with stylus length of 10 mm)	0.08 N; 0.25 N; 0.4 N
Stylus length	max. 50 mm
Stylus weight	max. 5 g

ZEISS RST-P



Directional-independent touch-trigger sensor

Length	65 mm
Diameter	24 mm
Measuring force at data acquisition	<0.01 N
Stylus length	max. 90 mm
Stylus weight	max. 10 g

ZEISS EagleEye



Optional for ZEISS CALENO with DSC

Laser line triangulation sensor with 6th axis.	Rotatable by n x 360°
Measuring range	100 mm
Line width	68 mm
Middle working distance	90 mm
Maximum error during sphere center test	70 μm^*

* Sphere center test on PRO 16/25.
29 angular positions of A-/B- and C-axis

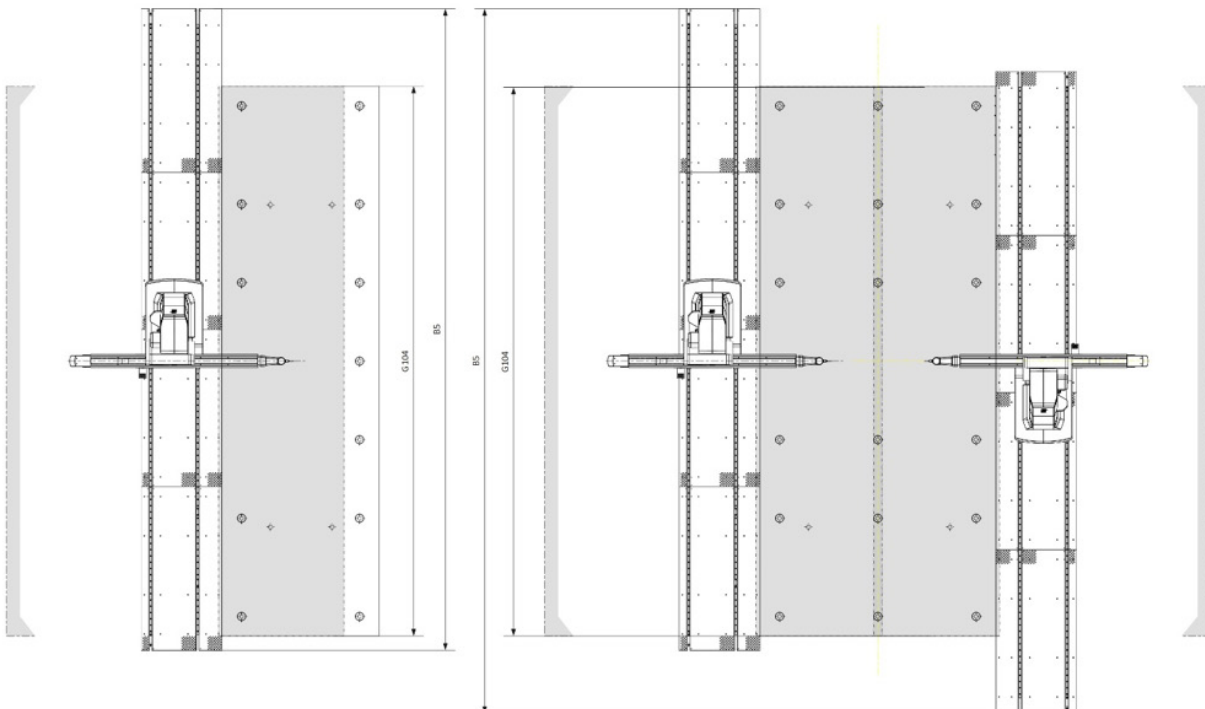
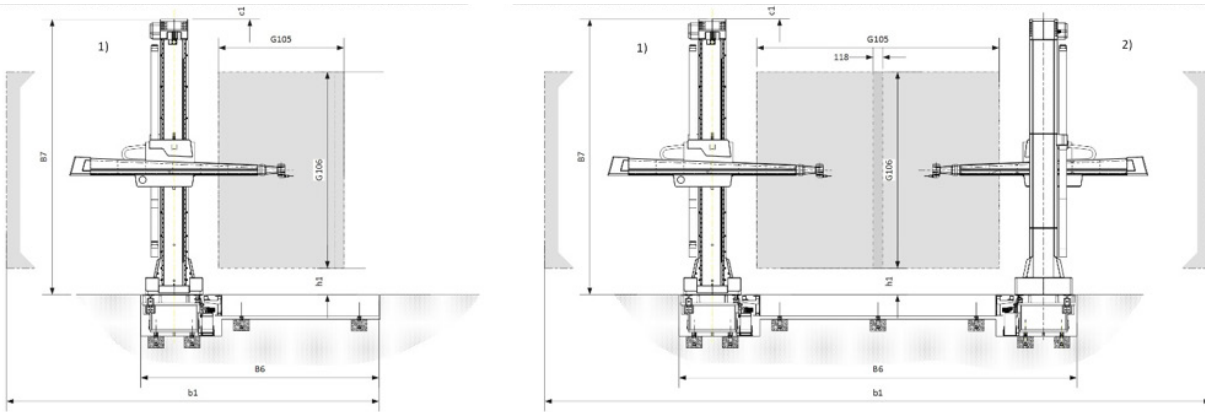
The following features can be measured with ZEISS EagleEye directly as a feature or as a link: Elongated hole, point, square hole, cylinder/threaded rods, sphere, edge, gap and alignment, double sheet metal, point cloud.



Sizes		Dimensions in mm										Weight in kg		
ZEISS CALENO Single arm	ZEISS CALENO Dual arm	Measuring range			Overall machine dimensions							Assembly space	Measuring machine	Measuring beams X-axis
		X-axis	Y-axis ¹⁾	Z-axis	Lenght ¹⁾	Single Arm width	Dual arm width		Height		Height			
		G104	G105	G106	B5	B6	b1	B6	b1	B7	h1			
50/16/25	50/30/25	5000	1600/3086	2500	6230/7030	3023	4727	5056	8454	3510	340	≥200	541	3200
60/16/25	60/30/25	6000	1600/3086	2500	7230/8030	3026	4727	5056	8454	3510	340	≥200	541	3700
70/16/25	70/30/25	7000	1600/3086	2500	8230/9030	3026	4727	5056	8454	3510	340	≥200	541	4200
50/16/30	50/30/30	5000	1600/3086	3000	6230/7030	3026	4727	5056	8454	4010	340	≥200	573	3200
60/16/30	60/30/30	6000	1600/3086	3000	7230/8030	3026	4727	5056	8454	4010	340	≥200	573	3700
70/16/30	70/30/30	7000	1600/3086	3000	8230/9030	3026	4727	5056	8454	4010	340	≥200	573	4200
50/18/25	50/30/25	5000	1800/3086	2500	6230/7030	3026	4927	5056	8854	3510	340	≥200	544	3200
60/18/25	60/30/25	6000	1800/3086	2500	7230/8030	3026	4927	5056	8854	3510	340	≥200	544	3700
70/18/25	70/30/25	7000	1800/3086	2500	8230/9030	3026	4927	5056	8854	3510	340	≥200	544	4200
50/18/30	50/30/30	5000	1800/3086	3000	6230/7030	3026	4927	5056	8854	4010	340	≥200	576	3200
60/18/30	60/30/30	6000	1800/3086	3000	7230/8030	3026	4927	5056	8854	4010	340	≥200	576	3700
70/18/30	70/30/30	7000	1800/3086	3000	8230/9030	3026	4927	5056	8854	4010	340	≥200	576	4200

¹⁾ Single / Dual arm

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.



Technical features

Length measuring system	Electro-optical reflected light system; resolution 1 µm	
Controller	Type	ZEISS C99
	Protection type	IP54
	Cooling system	Fan/ optional air conditioner
Accessories (optional)	Safety technology for high travel speed, CNC sensor rack, column lock, safety position (crane lock), kink protection for articulating joints, automatic temperature capture of CMM and workpiece, various control panels	


Environmental requirements ²⁾

Ambient temperature		T1	T0	
		16 °C - 24 °C	18 °C - 22 °C	
	Temperature fluctuations	Per hour	1.5 K/h	0.5 K/h
		per day	3.0 K/d	2.0 K/d
Temperature gradient	Spatial	1.0 K/m	0.5 K/m	
Relative humidity		30 % - 80 %	40 % - 70 %	
Acoustic pressure	max. 80dbA			

Requirements for operational readiness

Relative humidity	80 % maximum without condensation
Ambient temperature	15 °C - 35°C
Electrical power rating	1/N/PE 100/110/115/120/125/230/240 V~, (+/-10%), 50/60 Hz (+/-3.5%) Max. power consumption when fully upgraded 2500 VA
Compressed air supply (for RDS-C6 only)	Supply pressure 6-10 bar, pre-cleaned, use approx. 0,8 NI/min operating pressure Air quality complies with ISO 8573 part 1: class 4

Approvals

Regulations	ZEISS CALENO complies with EC machine directive 2006/42/EC and EMC directive 2014/30/EU. 
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Disposal	ZEISS products and packaging returned to us are disposed of in accordance with applicable legal provisions.
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Certification/accreditation

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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