

LEITZ REFERENCE LINE

VERSION 2016-7



Description

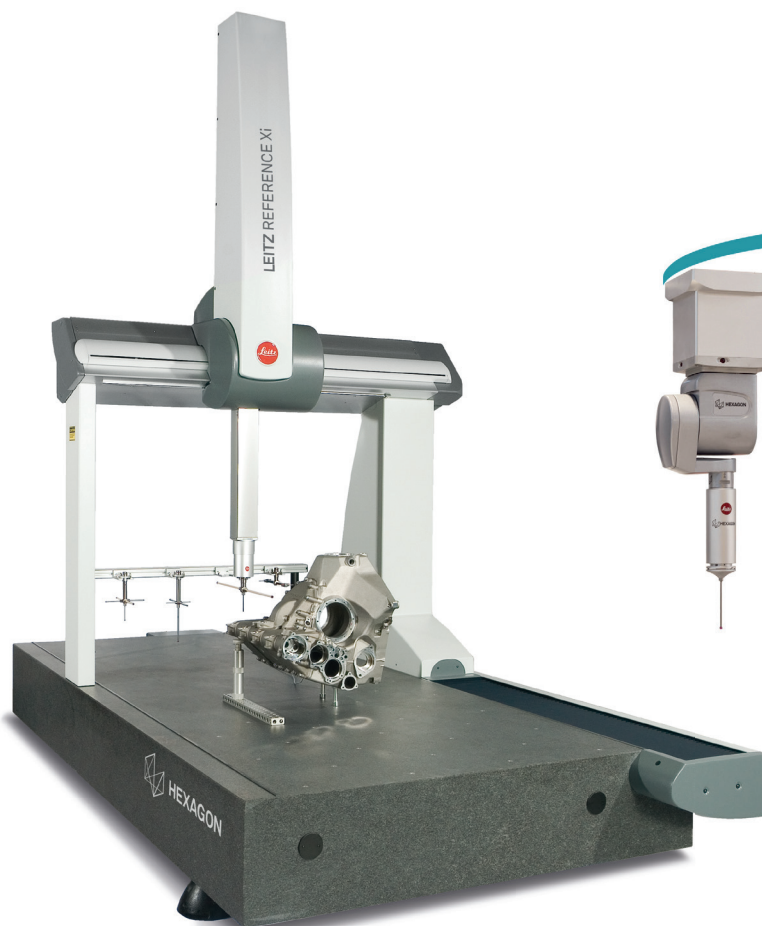
High accuracy, universal measuring machines in moving bridge design.
For measuring room and shop floor (with option XT).
Optional with optical laser sensors and roughness measurement.
New: SENMATION Technology – intelligent sensor automation.

Applications

Coordinate measurements	Inspection of any kind of parts and geometries for manufacturing as well as for R&D. CMMs for quality control centres and inline shop floor inspection.
Gear inspection	For gear diameters of up to 1450 mm. Capable of measuring any type of gear, gear segments, gear racks and any type of gear cutter. No rotary table required for the measurements.
Form testing	Quality control of form tolerances: roundness, cylindricity, flatness, straightness and profil form. Non-contact inspection of surfaces (optional), i.e. bearing seats, turbine blades, etc.
Roughness measurement	Profiler R roughness sensor (optional), automatically exchangeable.

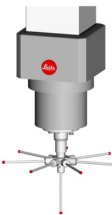
Design

Frame	Moving bridge design with patented TRICISION™ technology.
Guideways	Granite table with integrated dove tail guide. Pre-loaded air bearings in all axes.
Drives	High Performance servo motors and steel-enforced belt drives.
Length measuring system	High resolution steel scales with incremental, electro-optical transducers.
Resolution	5 nm (0.005 µm)
Temperature compensation	Automatic temperature compensation for scales and workpiece.
Damping system	Elastomere damping (optional: active pneumatic damping).



SENMATION
Intelligent Sensor Automation

**Leitz Probe Heads
Reference HP**

	LSP-S2 Scan+	LSP-S2	HP-S-X3C
			
Leitz Reference HP 5.4.3 / 7.7.5			●
Leitz Reference HP XX.YY.6 / 7	●	○ ⁽¹⁾	
Leitz Reference HP XX.12.9	●	○ ⁽¹⁾	
Leitz Reference HP XX.15.ZZ	●	○ ⁽¹⁾	
Measuring methods	3D-Self-Centring Scanning, variable High Speed Scanning Tag Scan, Scan Catch, Four Axis Scan, Optical Scanning		
Max. data rate	1000 points/s	1000 points/s	1000 points/s
Probing force	0.1 to 1.2 N	0.1 to 1.2 N	0.1 to 0.6 N
Max. stylus length	800 mm	800 mm	360 mm
Max. stylus weight (incl. stylus clamping)	650 g	1000 g	150 g
Smallest tip diameter	0.1 mm	0.1 mm	0.1 mm
Optical sensors (optional)	-	HP-O	-
Roughness sensor (optional)	Profiler R	Profiler R	-

⁽¹⁾ For optional probe head LSP-S2 the following specifications are valid: THP = THP + 0.3 µm + 5 s; PFTM / PLTM / PSTM = PFTM / PLTM / PSTM + 0.2 µm

**Leitz Probe Heads
Reference Xi**

	HP-S-X5-HD	HP-S-X3C	HH-A-T2.5 / T5 HP-S-X1H	HP-S-X1C
				
Leitz Reference Xi 5.4.3		●	○	○
Leitz Reference Xi 7.7.5 / 10.7.6	○	●	○	○
Leitz Reference Xi	●	○	○	○
Measuring methods	3D-Self-Centring Scanning, variable High Speed Scanning Tag Scan, Scan Catch, Four Axis Scan, Optical Scan			
Max. data rate	1000 points/s	1000 points/s	1000 points/s	1000 points/s
Probing force	0.1 to 1.2 N	0.1 to 0.6 N	0.1 to 0.6 N	0.1 to 0.6 N
Max. stylus length	800 mm	360 mm	20-225 mm cranked styli ≤ 100 mm	20-225 mm cranked styli ≤ 100 mm
Max. stylus weight (incl. stylus clamping)	650 g	150 g	33 g	33 g
Smallest tip diameter	0.1 mm	0.1 mm	0.1 mm	0.1 mm
Optical sensor (optional)	-	-	HP-L-10.6T	-
Roughness sensor (optional)	Profiler R	-	-	-

● standard ○ optional

Optical Sensors	HP-O		HP-L-10.6T
	Short range	Mid range	
Measuring methods	Laser point, interferometric		Laser line
Measuring angle to surface	rough: reflecting:	$\pm 30^\circ$ $\pm 4^\circ$	$\pm 30^\circ$ $\pm 1^\circ$
Working distance / measuring range	6.5 mm / 0.4 mm	10.5 mm / 2 mm	170 mm / 24 ; 60 ; 123 mm 30 mm depth FOV
Resolution in Z direction	< 3 nm		
Spot diameter	11 μm		40 μm
Applications	Metallic technical surfaces		all kinds of surfaces
Laser protection class ⁽¹⁾	2		2

Roughness Sensor	Profiler R
Type	tactile, traditional
Measuring length / range	12.5 mm (15 mm) / 500 μm
Probe tip	2 μm / 90°, exchangeable
Parameter	R_a , R_z , R_q , R_t and more according to ISO 4287 and ISO 13565
Measuring deviation	R_a = 8% for measuring range 0.2 μm - 2 μm R_z = 10% for measuring range 1 μm - 10 μm

Options

- SENMATION - Automatic sensor exchange
- Roughness sensor Profiler R
- Option XT: Extended temperature range with covered guideways (not Reference 5.4.3 and 7.7.5)
- Automatic temperature sensor
- Rotary table, integrated or "on top"
- Environment Monitoring System
- Optical point sensor HP-O
- Optical line sensor HP-L-10.6T
- Automatic styli changer, TravelRack
- Option High Speed
- Climate controlled room
- Manual and automated part loading system



Optical point sensor HP-O



Optical line sensor HP-L-10.6T



Roughness sensor Profiler R



Automatic temperature sensor

⁽¹⁾ Under reasonably foreseeable operating conditions, Class 2 laser devices would not be expected to cause any permanent eye damage, provided that any exposure can be terminated through the eyelid closing reflex (assumed to be 0.25 s).

Max. permissible Errors MPE [µm] acc. to ISO 10360-2 (2010)		Temp. range	5.4.3 7.7.5	10.7.6 XX.9.7	XX.12.9	30.15.9
Volumetric length measuring error ⁽¹⁾⁽²⁾	E ₀	19-21° C	0.7 + L / 400	0.9 + L / 400		
	E ₁₅₀	19-21° C	0.7 + L / 350 ⁽³⁾	0.9 + L / 350		
	Option XT E ₀ / E ₁₅₀	15-30° C		1.2 + L / 250		
	E ₀ / E ₁₅₀	18-22° C			1.5 + L / 350	1.9 + L / 350
	Option XT E ₀ / E ₁₅₀	18-28° C			1.8 + L / 300	2.9 + L / 300
Repeatability range ⁽¹⁾⁽²⁾	R ₀		0.45	0.6	0.7	1.0

ISO 10360-4 (2000)

Single stylus Form error, scanning ⁽⁴⁾	THP		1.4/45s	1.4/40s	1.6/40s	2.2/40s
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ISO 10360-5 (2011)

Single stylus Form error ⁽²⁾	PFTU		0.8	0.9	1.2	1.6
Multi styli Form error ⁽⁵⁾⁽⁶⁾	PFTM		2.1	2.2	2.5	2.7
Multi styli Size error ⁽⁵⁾⁽⁶⁾	PSTM		0.6	0.9	1.2	1.4
Multi styli Location error ⁽⁵⁾⁽⁶⁾	PLTM		1.5	1.6	1.8	1.9

ISO 12181

Form measurement error ⁽⁷⁾	RONT		1.0	1.0	1.3	1.6
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Specifications for optical sensor HP-0

ISO 10360-8 (2013)

Form error	PForm. Sphere 1x25:Tr				3.6	
Size error	PSize. Sphere 1x25:Tr				6.6	

ISO 10360-9 (2013) ⁽⁶⁾

Multi probing system Form error	PForm. Sphere 2x25:MPS				5.2	
Multi probing system Size error	PSize. Sphere 2x25:MPS				4.8	
Multi probing system Location error	LDia. 2x25:MPS				6.2	

Permitted Environmental Conditions

Temp. gradient (hour / day / meter)	19-21° C: 1 / 1.2 / 1 K	18-22° C: 1 / 2 / 1 K	15-30° C and 18-28° C: 2 / 5 / 2 K
Relative air humidity	30% – 70%, non-condensing		

Throughput

Max. probing frequency	35/min	40/min
Max. positioning speed	450 mm/s	520 mm/s
Max. acceleration	4000 mm/s ²	3300 mm/s ²

- ⁽¹⁾ E₀, E₁₅₀ and R₀ are valid for a length gauge with an uncertainty of calibration of $\leq 0.08 + 0.3 \times L / 1000$ and a CTE between $8 \times 10^{-6} / K$ and $13 \times 10^{-6} / K$. For measuring lengths of more than 1000 mm the availability of adequate gauges has to be confirmed with the manufacturer.
- ⁽²⁾ E₀, R₀ and PFTU are valid for Leitz styli $\varnothing 3 \times 35$ mm up to $\varnothing 8 \times 130$ mm (HP 5.4.3: $\varnothing 3 \times 35$ up to $\varnothing 8 \times 50$ mm), w/o extension; anywhere in the meas. volume.
- ⁽³⁾ E₁₅₀ is valid for Reference 7.7.5 only.
- ⁽⁴⁾ THP is valid for a Leitz stylus $\varnothing 5 \times 80$ mm.
- ⁽⁵⁾ PFTM, PSTM, PLTM are valid for 5 Leitz styli $\varnothing 5 \times 80$ mm (for HP 5.4.3: Leitz stylus $\varnothing 1.5$ mm $\times$ 53 mm). To be tested near the reference sphere.
- ⁽⁶⁾ For probe head change (SENMATION) 1 µm has to be added.
- ⁽⁷⁾ RONT (MZCI) is valid for a Leitz stylus $\varnothing 5 \times 80$ mm, filter 50 UPR, with precision calibration. Verification with QUINDOS only. Form measurement error (roundness) at a $\varnothing 50$ mm ring gauge, in scanning mode, acc. to EN ISO 12 181 (VDI/VDE 2617, part 2.2).

Specifications for acceptance test with ball plates on request.
Specifications are valid with original Leitz accessories only.

Max. permissible Errors MPE [μm] acc. to ISO 10360-2 (2010) ⁽¹⁾⁽²⁾	Temp. range	5.4.3 7.7.5	10.7.6 XX.9.7	XX.12.10	30.15.10	26.15.14 33.15.14
Volum. length measuring error E_0/E_{150}	18-24° C	1.1 + L/350 ⁽³⁾	1.2 + L/350	1.7 + L/350	2.2 + L/350	2.8 + L/350
Option XT E_0/E_{150}	15-30° C		1.8 + L/200	2.0 + L/200		
Option XT E_0/E_{150}	30-35° C		2.0 + L/175	2.3 + L/175		
Repeatability range R_0		0.6	0.8	0.9	1.2	1.8

ISO 10360-4 (2000)

Single stylus Form error, scanning ⁽⁴⁾	THP	1.5/45s	1.8/40s	2.5/40s	3.0/40s	3.5/45s
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ISO 10360-5 (2011)

Single stylus Form error ⁽²⁾	PFTU	1.0	1.1	1.6	2.0	2.8
Multi styli Form error ⁽⁵⁾	PFTM	2.5	2.5	2.7	2.8	3.3
Multi styli Size error ⁽⁵⁾	PSTM	0.9	1.3	1.4	1.5	1.7
Multi styli Location error ⁽⁵⁾	PLTM	1.8	1.8	1.9	2.0	2.5

ISO 12181

Form measurement error ⁽⁶⁾	RONt	1.1	1.2	1.6	2.6	3.0
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Permitted Environmental Conditions

Temp. gradient (hour/day/meter)	18-24° C: 1/2/1 K; 15-35° C: 2/5/2 K
Relative air humidity	30% - 70%, non-condensing

Throughput

Max. probing frequency	35/min	
Max. positioning speed (Option: High Speed)	450 mm/s	520 mm/s (800 mm/s)
Max. acceleration	4000 mm/s ²	

- ⁽¹⁾ E_0 , E_{150} and R_0 are valid for a length gauge with an uncertainty of calibration of $\leq 0.08 + 0.3 \times L/1000$ and a CTE between $8 \times 10^{-6}/\text{K}$ and $13 \times 10^{-6}/\text{K}$. For measuring lengths of more than 1000 mm the availability of adequate gauges has to be confirmed with the manufacturer.
- ⁽²⁾ E_0 , R_0 and PFTU are valid for Leitz styli $\varnothing 3 \times 35$ mm up to $\varnothing 8 \times 130$ mm, (Xi 5.4.3: $\varnothing 3 \times 35$ up to $\varnothing 8 \times 50$ mm) w/o extension; anywhere in the meas. volume.
- ⁽³⁾ E_{150} is valid for Reference 7.7.5 only.
- ⁽⁴⁾ THP is valid for a Leitz stylus $\varnothing 5 \times 80$ mm.
- ⁽⁵⁾ PFTM, PSTM, PLTM are valid for 5 Leitz styli $\varnothing 5 \times 80$ mm (for Xi 5.4.3: Leitz stylus $\varnothing 1.5 \times 53$ mm). To be tested near the reference sphere. For probe head change (SENMATION) $1 \mu\text{m}$ has to be added.
- ⁽⁶⁾ RONt (MZCI) is valid for a Leitz stylus $\varnothing 5 \times 80$ mm, filter 50 UPR, with precision calibration. Verification with QUINDOS only.
- Form measurement error (roundness) at a $\varnothing 50$ mm ring gauge, in scanning mode, acc. to EN ISO 12 181 (VDI/VDE 2617, part 2.2).

Specifications for acceptance test with ball plates on request.
Specifications are valid with original Leitz accessories only.

Max. measuring error MPE [μm] acc. to ISO 10360-2 (2010)		Temp. range	5.4.3 7.7.5	10.7.6 XX.9.7	XX.12.10	30.15.10	26.15.14 33.15.14
Volum. length measuring error	E_0/E_{200}	18-24° C	$1.3 + L/350^{(3)}$	$1.5 + L/350$	$2.0 + L/350$	$2.5 + L/350$	$3.2 + L/350$
	Option XT E_0/E_{200}	15-30° C		$1.8 + L/200$	$2.0 + L/200$		
	Option XT E_0/E_{200}	30-35° C		$2.0 + L/175$	$2.3 + L/175$		
Repeatability range	R_0		0.8	1.0	1.1	1.4	2.1

ISO 10360-4 (2000)

Single stylus Form error, scanning ⁽⁴⁾	THP		2.0/45s	2.2/45s	2.9/45s	3.7/45s	4.5/45s
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ISO 10360-5 (2011)

Single stylus form error ⁽²⁾	PFTU		1.3	1.5	1.8	2.5	3.2
Multi styli form error ⁽⁵⁾	PFTM		4.9	4.9	5.2	5.3	5.6
Multi styli size error ⁽⁵⁾	PSTM		2.4	2.8	2.9	2.9	3.2
Multi styli location error ⁽⁵⁾	PLTM		3.8	3.8	3.9	3.9	4.3

ISO 12181

Form measurement error ⁽⁶⁾	RONt		1.5	1.6	1.8	3.1	3.9
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Specifications for optical sensor HP-L-10.6T

ISO 10360-8 (2013)

Form error	PForm. Sphere 1x25:Tr				30 μm		
Dispersion value 95%	PForm. Sphere .D95%:Tr				40 μm		
Size error	PSize. Sphere 1x25:Tr				40 μm		

Permitted Environmental Conditions and Throughput

For Reference HP see page 5, for Reference Xi see page 6.

- ⁽¹⁾ E_0 , E_{200} and R_0 are valid for a length gauge with an uncertainty of calibration of $\leq 0.08 + 0.3 \times L/1000$ and a CTE between $8 \times 10^{-6}/\text{K}$ and $13 \times 10^{-6}/\text{K}$. For measuring lengths of more than 1000 mm the availability of adequate gauges has to be confirmed with the manufacturer.
- ⁽²⁾ E_0 , R_0 , PFTU are valid for a Leitz stylus $\varnothing 3 \times 50$ mm, without extension. Anywhere in the measuring volume.
- ⁽³⁾ E_{200} is valid for Reference 7.7.5 only.
- ⁽⁴⁾ THP is valid for a Leitz stylus $\varnothing 3 \times 50$ mm.
- ⁽⁵⁾ PFTM, PSTM, PLTM are valid for HH-A-T2.5 with a Leitz stylus $\varnothing 3 \times 50$ mm. Tested near the reference sphere. For PH change (SENMATION) 1 μm has to be added.
- ⁽⁶⁾ RONt (MZCI) is valid for a Leitz stylus $\varnothing 3 \times 50$ mm, filter 50 UPR, with precision calibration. Verification with QUINDOS only.
- Form measurement error (roundness) at a $\varnothing 50$ mm ring gauge, in scanning mode, acc. to EN ISO 12 181 (VDI/VDE 2617, part 2.2).

Specifications for acceptance test with ball plates on request.
Specifications are valid with original Leitz accessories only.

CMM Capability Charts - Distances and Diameters

Tolerance [mm]	Distance or diameter [mm]						
	50	100	200	400	600	1000	2000
± 0.005	$0.5 + L / 900$	$0.4 + L / 1000$	$0.3 + L / 1000$				
± 0.007	$0.7 + L / 700$	$0.5 + L / 500$	$0.5 + L / 1000$	$0.3 + L / 1000$			
± 0.010	$0.9 + L / 400$	$0.8 + L / 500$	$0.6 + L / 500$	$0.5 + L / 800$	$0.4 + L / 1000$		
± 0.015	$1.3 + L / 300$	$1.2 + L / 350$	$0.9 + L / 350$	$0.7 + L / 500$	$0.6 + L / 700$	$0.4 + L / 900$	
± 0.020	$1.8 + L / 250$	$1.6 + L / 250$	$1.3 + L / 300$	$0.9 + L / 350$	$0.8 + L / 500$	$0.6 + L / 700$	$0.3 + L / 1200$
± 0.030	$2.8 + L / 200$	$2.6 + L / 250$	$2.2 + L / 250$	$1.7 + L / 300$	$1.5 + L / 400$	$1.0 + L / 500$	$0.5 + L / 800$
± 0.050	$4.7 + L / 150$	$4.3 + L / 150$	$4.0 + L / 200$	$3.0 + L / 200$	$2.6 + L / 400$	$1.7 + L / 300$	$1.0 + L / 500$

Example: A diameter of 400 mm has a tolerance of ± 0.020 mm.

For the inspection of this feature a CMM with a length measuring error $E_0 = 0.9 + L / 350 \mu\text{m}$ is required.

CMM Capability Charts - Form Tolerances

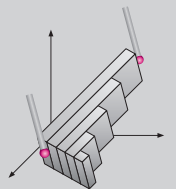


Tolerance [μm]	0.005 mm	0.007 mm	0.010 mm	0.015 mm	0.020 mm	0.030 mm	0.050 mm
PFTU	0.5	0.7	1.0	1.5	2.0		
THP				1.5	2.0	3.0	5.0

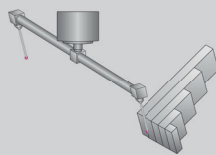
Example: For inspection of a roundness tolerance of 0.015 mm a CMM with a single stylus form error of PFTU = 1.5 μm respectively with a single stylus form error, scanning THP = 1.5 μm is required. Note: PFTU and THP are specified for small areas only (up to 30 mm).

CMM capability charts are applicable only, if the feature can be measured with a stylus for which the accuracy of the CMM is specified.

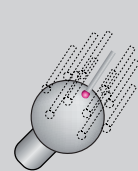
ISO 10360

ISO 10360-2
Volumetric length
measuring error
 E_0 

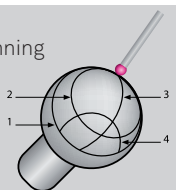
5 gauges have to be measured 3 times with one probing each end, in 7 different directions. All measuring results must be within $\gg E_{150}$

ISO 10360-2
Volumetric length
measuring error
 E_{150} 

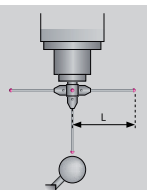
5 length gauges have to be measured 3 times in the YZ- or XZ plane with opposite styli, mounted 150 mm off the Z spindle axis.

ISO 10360-5
Single stylus form error
PFTU

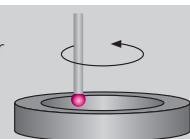
A precision sphere has to be measured with 25 probeings. PFTU is the range of all radii. $PFTU = R_{\max} - R_{\min}$ = sphere form.

ISO 10360-4
Single stylus form error scanning
THP

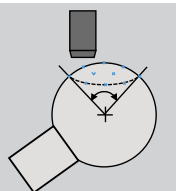
A precision sphere has to be scanned with 4 defined lines. THP is the range of all radii. $THP = R_{\max} - R_{\min}$ = sphere form, scanning.

ISO 10360-5
Multi styli error
form PFTM
size PSTM
location PLTM

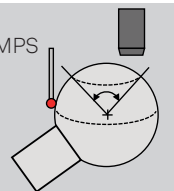
A sphere is measured with 5 styli (fixed PH) or with 1 stylus in 5 orientations (articulating PH) with 5×25 probeings. Form, size and location error over 125 points.

ISO 12181
Form measurement error
RONt (MZCI)

A ring gauge, $\varnothing 50$ mm, is scanned with high point density. The range of radial distances is then evaluated on a calculated Tschebyscheff-circle.

ISO 10360-8
Optical Sensors
Form error
Size error

A sphere is measured with 25 optical probeings. $P_{\text{Form.Sphere.1x25:tr}}$ is the range of all radii = $R_{\max} - R_{\min}$ (sphere form) $P_{\text{Size.Sphere.1x25:tr}}$ is the diameter deviation $D_{\text{meas}} - D_{\text{cal}}$

ISO 10360-9
Multiple Probing Systems: MPS
Form error
Size error
Location error

A sphere is measured with contact and non contact sensor, with 25 probeings each. Form and size error over all 50 points. Location error $L_{\text{Dia.2x25:MPS}}$ = space distance between both center points.

Gear Measuring Capability

Cylindrical gears	Spur, helical, double helical, splines (internal and external)
Clutch gears	Internal and external
Gear segments	Minimum No. of teeth: 1
Gear racks	Constant ratio, variable ratio
Bevel gears	Straight bevel, spiral bevel, hypoid bevel, crown gears
Couplings	Curvic, Hirth
Gear cutting tool	Hob cutter, indexable insert hob, broach, shaper cutter, shaving gears, form cutter
Evaluation standards	DIN, ISO, AGMA, ANSI, JIS, CNOMO, CAT
Available interfaces	Gleason GAGE 4/WIN, Klingelnberg KIMOS, DMG Mori, Depo
Measuring principle	3-Axes, gear fixed anywhere in the measuring volume. No rotary table required. Profile and flank inspection with Variable High-Speed-Scanning with involute path control.
Alignment of the gear axis	Vertical or horizontal
Max. No. of gears on pallet	Not limited, depending on gear diameter and machine measuring range.

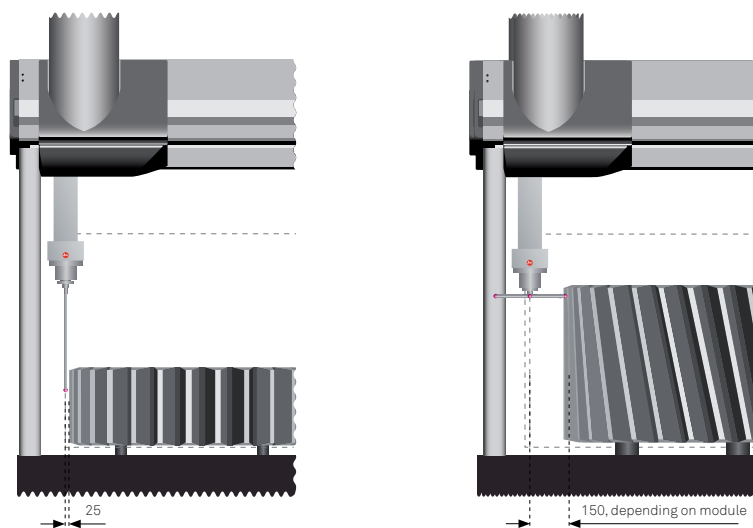
Available QUINDOS Software Modules for Gear Inspection

Gears and Worms	• Gear • Spiral Bevel Gear • Sprocket • Rack, constant	• Gear Gauges • Cylindrical Worm • Curvic Couplings • Rack, variable	• Unknown Gear • Worm Wheel • CAT Gear • Shaving Gear	• Straight Bevel Gear • Globoid Worm • Hirth Gear • Broach
Cutting Tools	• Hob Cutter • Form Cutter	• Shaper Cutter		

Gear related Specifications

Module range	0.5 - 100 mm				
Max. gear width	= Z-range of the machine (vertical orientation), e. g. 900 mm for a 30.12.9				
Max. shaft length	= X-range of the machine (horizontal orientation), e. g. 3000 mm for a 30.12.9				
Spiral angle	0° - 90°				
Machine accuracy	Group 1 according to VDI/VDE 2612/2613, page 1 and 2				
Min. Gear ø	Not limited				
Max. Gear ø, external [mm]	5.4.3	7.7.5/10.7.6	XX.9.7	XX.12.9	

⁽¹⁾depending on module and styli configuration



Electronics and Safety

Electronics control	Microprocessor controller in a service-friendly, modular design with integrated monitoring. Worldwide remote diagnostics through Hexagon Manufacturing Intelligence service and internet available.	
Collision protection	HP	: for probe system and styli, in setup mode.
	Xi + HP 5.4.3	: for styli in setup mode
Safety standards	CE-certificate; CE-conform with machine directive (2006/42/EG), EMC directive (2014/30/EU). NRTL and NFPA79 on request.	

Supply Specifications

Controller	B5	B5 - USA, Japan
Protection class	IP 54	IP 54
Operating voltage	230 V, $\pm 10\%$; 50 - 60 Hz; P, N, PE	115 V, $\pm 10\%$; 50 - 60 Hz; P, N, PE
Power requirement	1.4 KVA	1.4 KVA
Power consumption	0.6 KVA	0.6 KVA
Rated current	6 A	12 A
Recommended main fuse	16 A	16 A

Air Supply

Pressure	≥ 0.55 MPa (5.5 bar)
Consumption	Approx. 79 NL/min
Quality	Class 4 according to ISO 8573, part 1

Software

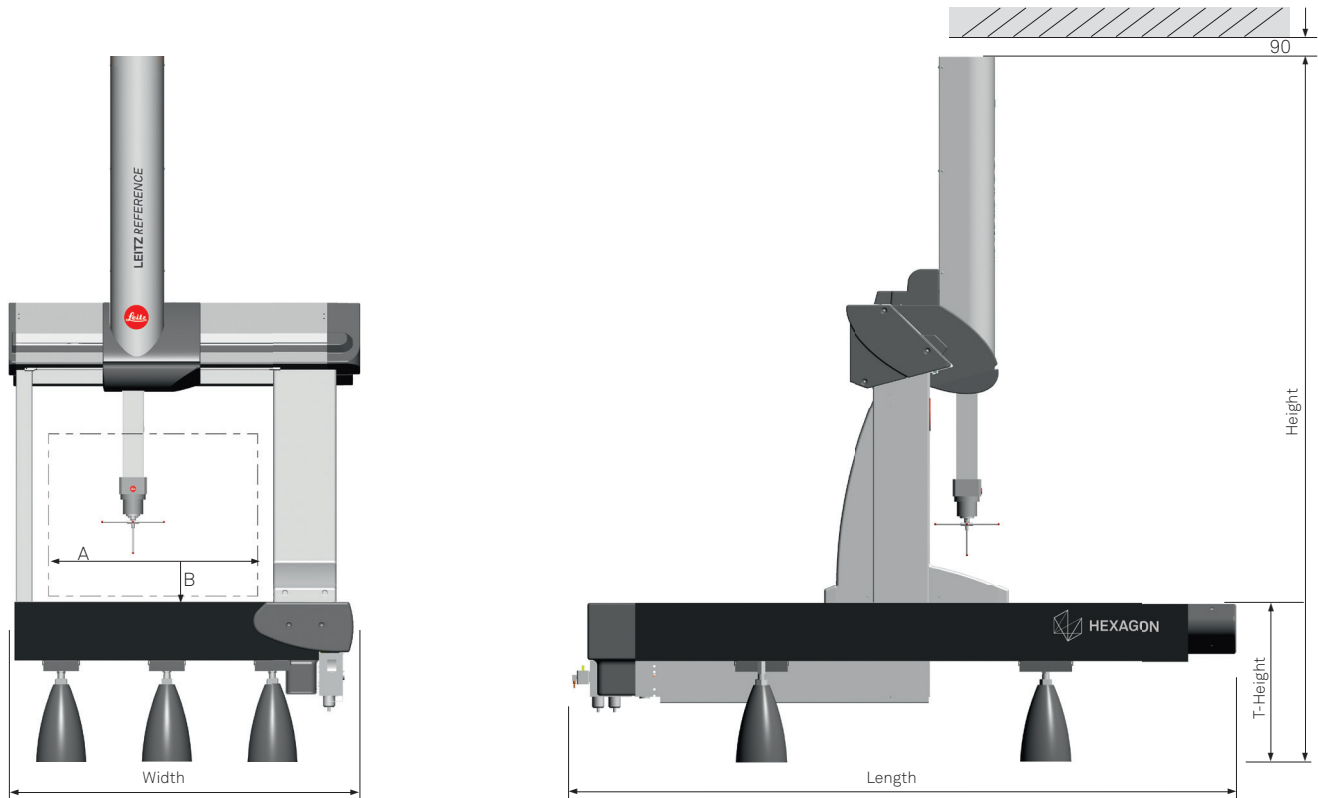
QUINDOS 7
PC-DMIS (not for SENMATION, HP-O, HP-L-10.6T, Profiler R, TravelRack)

Measuring Ranges Standard (SENMATION)

Model	Probe System	Measuring Range [mm]	Model	Probe System	Measuring Range [mm]
HP/Xi 5.4.3	HP-S-X3C/X1H ⁽¹⁾	500 x 400 x 300	HP 15/22.12.9	LSP-S2/Scan+	1500/2200 x 1200 x 900
HP/Xi 7.7.5	HP-S-X3C/X1H ⁽¹⁾	700 x 700 x 500	Xi 15/22.12.10	HP-S-X5/X3C	1500/2200 x 1200 x 900 (820)
HP 10.7.6	LSP-S2/Scan+	1000 x 700 x 590		HP-S-X1H ⁽¹⁾	1500/2200 x 1200 x 1000 (800)
Xi 10.7.6	HP-S-X5	1000 x 700 x 580	HP 30.12.9	LSP-S2/Scan+	3000 x 1200 x 900
	HP-S-X3C	1000 x 700 x 600	Xi 30.12.10	HP-S-X5/X3C	3000 x 1200 x 900 (820)
	HP-S-X1H ⁽¹⁾	1000 x 700 x 650		HP-S-X1H ⁽¹⁾	3000 x 1200 x 1000 (800)
HP 12/15.9.7	LSP-S2/Scan+	1200/1500 x 900 x 700	HP 40/45.12.9	LSP-S2/Scan+	4000/4500 x 1200 x 900
Xi 12/15.9.7	HP-S-X5	1200/1500 x 900 x 690 (590)	Xi 40/45.12.10	HP-S-X5/X3C	4000/4500 x 1200 x 900 (820)
	HP-S-X3C	1200/1500 x 900 x 700		HP-S-X1H ⁽¹⁾	4000/4500 x 1200 x 1000 (800)
	HP-S-X1H ⁽¹⁾	1200/1500 x 900 x 760 (635)	HP 30.15.9	LSP-S2/Scan+	3000 x 1500 x 900
HP 20.9.7	LSP-S2/Scan+	2000 x 900 x 700	Xi 30.15.10	HP-S-X5/X3C	3000 x 1500 x 900 (820)
Xi 20.9.7	HP-S-X5	2000 x 900 x 690 (590)		HP-S-X1H ⁽¹⁾	3000 x 1500 x 1000 (800)
	HP-S-X3C	2000 x 900 x 700	Xi 26/33.15.14	HP-S-X5/X3C	2600/3300 x 1500 x 1210 (1130)
	HP-S-X1H ⁽¹⁾	2000 x 900 x 760 (635)		HP-S-X1H ⁽¹⁾	2600/3300 x 1500 x 1350 (1250)

⁽¹⁾ For HP-S-X1H with HH-AS-T2.5

Dimensions in mm



Model	Probe System ⁽¹⁾	Length [mm]	Width [mm]	Height ⁽²⁾ [mm]	T-Height ⁽²⁾ [mm]	A [mm]	B [mm]	B ⁽³⁾ [mm]	Weight [kg]
5.4.3	HP-S-X3C/X1H	1405	950	2087	800	526	46/72	-	550
7.7.5	HP-S-X3C/X1H	1610	1250	2601	770	830	30/95	-	1.200
10.7.6	LSP-S2/HP-S-X5/X3C/X1H	1910	1250	2773	770	830	25/29/90/72	-	1.650
12.9.7	LSP-S2/HP-S-X5/X3C/X1H	2500	1560	3073	700	1030	29/32/90/72	15/33	2.750
15.9.7	LSP-S2/HP-S-X5/X3C/X1H	2800	1560	3073	700	1030	29/32/90/72	15/33	3.400
20.9.7	LSP-S2/HP-S-X5/X3C/X1H	3300	1560	3073	700	1030	29/32/90/72	15/33	4.550
15.12.9/10	LSP-S2/HP-S-X5/X3C/X1H	2900	1860	3422	610	1330	57/49/90/72	15/35	5.250
22.12.9/10	LSP-S2/HP-S-X5/X3C/X1H	3650	1860	3422	610	1330	57/49/90/72	15/35	7.700
30.12.9/10	LSP-S2/HP-S-X5/X3C/X1H	4450	1860	3512/3422	700/610	1330	57/49/90/72	15/35	8.800
40.12.9/10	LSP-S2/HP-S-X5/X3C/X1H	5450	1860	3662/3572	850/760	1330	57/49/90/72	15/35	14.300
45.12.9/10	LSP-S2/HP-S-X5/X3C/X1H	5950	1860	3662/3572	850/760	1330	57/49/90/72	15/35	15.600
30.15.9/10	LSP-S2/HP-S-X5/X3C/X1H	4450	2160	3662/3572	850/760	1600	57/49/90/72	15/35	12.700
26.15.14	HP-S-X5/X3C/X1H	3950	2160	4545/4455	850	1700	49/90/72	15/35	12.600
33.15.14	HP-S-X5/X3C/X1H	4650	2160	4545/4455	850	1700	49/90/72	15/35	14.800
Controller B5		800	400	1200					115

⁽¹⁾ HP-S-X1H with HH-AS-T2.5; LSP-S2 Scan+ same as LSP-S2

⁽²⁾ Dimensions for passive and active damping

⁽³⁾ With SENMATION and HP-S-X5-HD / HP-S-X1H with HH-AS-T2.5

Permitted Table Load

Reference 5.4.3: 250 kg
Reference XX.YY.7: 1500 kg
Reference XX.YY.14: 5000 kg

Higher table load on request.

Reference 7.7.5 + 10.7.6: 900 kg
Reference XX.YY.9/10: 2250 kg



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