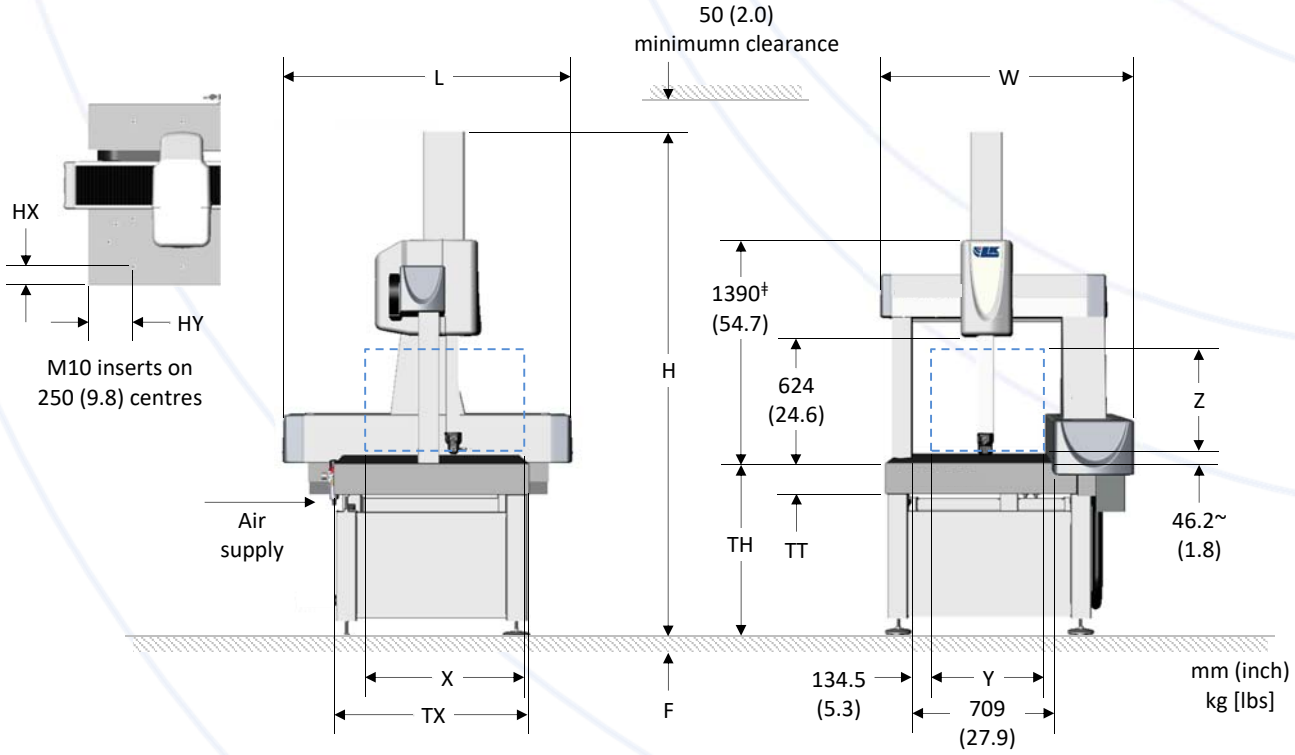
Datasheet

ALTERA S 7.5.5

Coordinate Measuring Machine



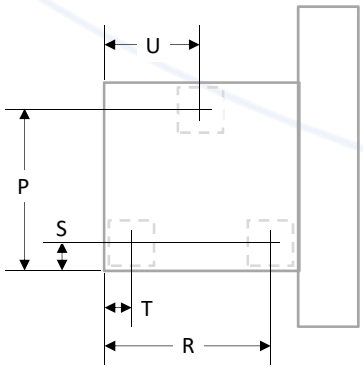


	Travels[1]			Overall			Granite Table					Floor	Table Loading		CMM
	X	Y	Z	L	W	H	TX	TT	TH	HX	HY	F[2]	Std.	Max.[3]	Weight
7.5.5	711	508	508	1573	1257	2505	940	150	840	232	95	60	165	256	637
	(28)	(20)	(20)	(61.9)	(49.5)	(98.6)	(37.0)	(5.9)	(33.1)	(9.1)	(3.7)	(2.4)	[364]	[564]	[1404]

[1]Maximum travel of probe head index point.
[2]Minimum thickness of homogeneous concrete floor with minimum shear strength of 0.4 N/mm2 (58 psi).
[3]Maximum table loading only permissible with workpiece positioned inside triangular area defined by table support centers.
~Z travel limit for PH10T/M PLUS only, for PH20 increase by 2.1mm (0.1"), for MH20i increase by 38.4mm (1.5").
‡Bridge off table access height excluding lifting equipment and clearances.

TABLE SUPPORT CENTERS

	Type	P	R	S	T	U
7.5.5	Passive AVM	880 (34.6)	957 (37.7)	60 (2.4)	60 (2.4)	609 (24.0)
	Active AVM	830 (32.7)	907 (35.7)	110 (4.3)	110 (4.3)	609 (24.0)





CONTROLLER		Width	Depth	Heigth	Mounting
NMC100	CMM controller	450 (17.7)	390 (15.4)	150 (5.9)	Desk
	PHC10 head controller	450 (17.7)	390 (15.4)	60 (2.4)	Desk
NMC300	CMM controller	600 (23.6)	600 (23.6)	850 (33.5)	Cabinet
UCC-T5	CMM controller	600 (23.6)	600 (23.6)	850 (33.5)	Cabinet



ALTERA with active anti-vibration mounts (AVM)

TOUCH PROBE ACCURACY[1]			**TP20**[2] **PH10T/M PLUS**	**T200**[3] **PH10T/M PLUS**	**SP25M**[4] **PH10M PLUS**	**PH20**[2]
ISO 10360 -2:2001						
Length measurement at 18°C to 22°C		MPE E	2.0+L/400	1.8+L/400	1.8+L/400	2.0+L/400
Length measurement 16°C to 26°C		MPE E	2.0+3L/400	1.8+3L/400	1.8+3L/400	2.0+3L/400
Probing accuracy touch mode	form	MPE P	2.8	1.7	1.6	2.8
ISO 10360 -4:2001						
Probing accuracy scanning mode	form time	MPE Tij MPT t	-	-	2.6 55 sec	-
ISO 10360 -5:2001						
Multi stylus fixed head position	form size location	MPE MF MPE MS MPE ML		6.0 4.0 6.0		
Multi stylus articulating head	form size location	MPE AF MPE AS MPE AL		6.0 4.0 6.0		

LASER SCANNER ACCURACY[5]			**LC15Dx**	**LC60Dx**	**L100**	**XC65Dx**	**XC65Dx-LS**
Fixed head sphere test	form	PF_SPT	1.9	9.0	6.5	12.0	15.0
Articulating head sphere test	location	PF_MOT	3.9	9.0	6.0	9.0	9.0

SPEEDS	
Acceleration	2306 mm/sec^2
Velocity	762 mm/sec

Conformance is proven when all errors of indication lie within or on the accuracy specification limits MPE/PF.
Conformance is unproven when one or more errors of indication lie outside the accuracy specification limits MPE/PF.

[1] Touch probe accuracy specifications using manufacturer specified test lengths and test sphere with empirical qualification.
- MPE E — Maximum volumetric length measurement error in microns where L is the measured length in millimeters.
- MPE P — Maximum single stylus form error in microns using touch point mode.
- MPE Tij MPT t — Maximum single stylus form error in microns using scanning mode with time taken in seconds.

[2] TP20 standard force module, EM2 module (PH20 MPE E only), Ø4x10mm stainless steel shaft stylus, Ø4x30mm tungsten carbide shaft stylus (MPE E only), Ø5x20mm star tungsten carbide shaft stylus (MPE M* only), touch velocity 0.1m/min, approach 10mm (MPE E only), 7mm (MPE P only).

[3] TP200 standard force module, Ø4x10mm stainless steel shaft stylus, Ø4x30mm tungsten carbide shaft stylus (MPE E only), Ø5x20mm star tungsten carbide shaft stylus (MPE M* only), touch velocity 0.1m/min, approach 10mm (MPE E only), 7mm (MPE P only).

[4] SP25M SM25-1 module, SH25-1 stylus holder, Ø4x50mm tungsten carbide shaft stylus, Ø3x21mm stainless steel shaft stylus (MPE M*/A* only), touch velocity 0.1m/min, scanning velocity 0.5m/min, approach 10mm (MPE E only), 7mm (MPE P only), 50 UPR 2σ filter.

[5] Laser scanner accuracy specifications for CMM with an accuracy of 2+L/350 or better using manufacturer specified test sphere with empirical qualification.
- PF_SPT — Maximum single probe head position form error in microns using scanning mode.
- PF_MOT — Maximum multiple probe head positions location error in microns using scanning mode.

TOUCH PROBE ACCURACY[1]		**TP20**[2] **PH10T/M PLUS**	**T200**[3] **PH10T/M PLUS**	**SP25M**[4] **PH10M PLUS**	**PH20**[2]
ISO 10360 -2:2009					
Length measurement at 18°C to 22°C	E0 MPE E150 MPE	2.0+L/400	1.8+L/400	1.8+L/400	2.0+L/400
Length measurement 16°C to 26°C	E0 MPE E150 MPE	2.0+3L/400	1.8+3L/400	1.8+3L/400	2.0+3L/400
Repeatability	R0 MPL	2.0	2.0	2.0	2.0
ISO 10360 -4:2001					
Probing accuracy scanning mode	form MPE Tij time MPT t	-	-	2.6 55 sec	-
ISO 10360 -5:2010					
Probing accuracy touch mode	form PFTU MPE	2.8	1.7	1.6	2.8
Multi stylus fixed head position	form PFTM MPE size PSTM MPE location PLTM MPE		6.0 4.0 6.0		
Multi stylus articulating head	form PFTE MPE size PSTE MPE location PLTE MPE		6.0 4.0 6.0		

LASER SCANNER ACCURACY[5] **ISO 10360 -8:2013**		**LC15Dx**	**LC60Dx**	**L100**	**XC65Dx**	**XC65Dx-LS**
Probing form	PForm.Sph.1x25 :Tr:ODS,MPE	7	20	15	25	35
Probing dispersion	PForm.Sph.D95% :Tr:ODS,MPL	7.6	36	26	48	60
Probing size All	PSize.Sph.All :Tr:ODS,MPE	15	30	20	45	80
Cone angle		100	125	125	115	125

SPEEDS

Acceleration	2306 mm/sec²
Velocity	762 mm/sec

Conformance is proven when all errors of indication lie within or on the accuracy specification limits MPE/MPL.
Conformance is unproven when one or more errors of indication lie outside the accuracy specification limits MPE/MPL.

[1] Touch probe accuracy specifications using manufacturer specified test lengths and test sphere with empirical qualification.

E0 MPE E150 MPE	Maximum volumetric length measurement error in microns where L is the measured length in millimeters.
R0 MPL	Maximum repeatability value in microns using E0 values.
MPE Tij MPT t	Maximum single stylus form error in microns using scanning mode with time taken in seconds.
PFTU MPE	Maximum single stylus form error in microns using touch point mode.

[2] TP20 standard force module, EM2 module (PH20 En MPE only), Ø4x10mm stainless steel shaft stylus, Ø4x30mm tungsten carbide shaft stylus (En MPE only), Ø5x20mm star tungsten carbide shaft stylus (P*TM MPE only), touch velocity 0.1m/min, approach 10mm (En MPE only), 7mm (PFTU MPE only).

[3] TP200 standard force module, Ø4x10mm stainless steel shaft stylus, Ø4x30mm tungsten carbide shaft stylus (En MPE only), Ø5x20mm star tungsten carbide shaft stylus (P*TM MPE only), touch velocity 0.1m/min, approach 10mm (En MPE only), 7mm (PFTU MPE only).

[4] SP25M SM25-1 module, SH25-1 stylus holder, Ø4x50mm tungsten carbide shaft stylus, Ø3x21mm stainless steel shaft stylus (P*TM MPE only), touch velocity 0.1m/min, scanning velocity 0.5m/min, approach 10mm (En MPE only), 7mm (PFTU MPE only), 50 UPR 2σ filter.

[5] Laser scanner accuracy specifications for CMM with an accuracy of 2+L/350 or better using manufacturer specified test sphere with empirical qualification.

PForm.Sph.1x25:Tr:ODS,MPE	Maximum probing form error in microns using 25 representative points in translatory scanning mode.
PForm.Sph.D95%:Tr:ODS,MPL	Maximum probing dispersion value in microns using 95% of the measured points in translatory scanning mode.
PSize.Sph.All:Tr:ODS,MPE	Maximum probing size error All in microns using all measured points in translatory scanning mode.
Cone angle	Region of sphere on which the measured points are selected.

PROBE HEADS	**PH10T PLUS**		**PH10M PLUS**				**PH20**
							
Head type	Indexing head		Indexing head				5-axis head
Head positions	720		720				Infinite
Angular tilt	0° to +105° in 7.5° steps		0° to +105° in 7.5° steps				±115°
Angular rotation	0° to ±180° in 7.5° steps		0° to ±180° in 7.5° steps				Continuous
Probe change rack	-		MRS ACR3				-

TOUCH PROBES	**TP20**	**TP200**	**TP20**	**TP200**	**SP25M**	**TP20**
Probe type	Touch trigger	Touch trigger	Touch trigger	Touch trigger	Scanning	Touch trigger
Min. stylus diameter	0.3 (0.012)	0.3 (0.012)	0.3 (0.012)	0.3 (0.012)	0.5 (0.02)	0.3 (0.012)
Max. stylus length	60 (2.4)	100 (3.9)	60 (2.4)	100 (3.9)	400 (15.7)	60 (2.4)
Max. probe extension	300 (11.8)	300 (11.8)	300 (11.8)	300 (11.8)	100 (3.9)	75 (3.0)
Min. probing force	0.055 N	0.02 N	0.055 N	0.02 N	0.1 N	0.055 N
Stylus change rack	MCR20	SCR200	MCR20	SCR200	FCR25	TCR20

LASER SCANNERS	-	**LC15Dx**	**LC60Dx**	**XC65Dx/-LS**	**L100**	-
Laser line width		15 (0.6)	60 (2.4)	3x 65 (2.6)	100 (3.9)	
Points/sec		70k	75k	75k	200k	
Resolution		22 µm	60 µm	65 µm	42 µm	
Standoff		68	125	107/202	135	

PERIPHERALS						
Controller	NMC100	NMC300	NMC300			UCC T5
Handbox	NCH10	SOLO	SOLO			MCU 5
Rotary Table	–	–	–			–
Automation	–	●	●			–

● Optional

– Not available

mm (inch)

TECHNICAL FEATURES

X axis guideway	Granite dovetail guideway with bellows covers on primary bridge leg
Y axis guideway	Mono-crystalline alumina ceramic guideway 220 x 102mm (8.7 x 4.0inch) with bellows covers
Z axis guideway	Mono-crystalline alumina ceramic guideway 70 x 70mm (2.8 x 2.8inch) with top-hat cover
X axis friction drive	Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor
Y axis friction drive	Stainless steel drive belt with preloaded rollers and DC servomotor
Z axis friction drive	Stainless steel drive belt with preloaded rollers and DC servomotor
Linear encoders	0.05µm stainless steel ribbon scale and optical read-head Renishaw TONiC™ system
Counterbalance	Fully adjustable pneumatic Z axis counter balance
Granite table	Granite table flatness according to DIN 876/III : Grade 0
Table inserts	Grid pattern of M10 x 1.5 threaded table inserts on 250 (9.8) center spacing
Air bearings	Single orifice multi-groove air bearings with 5µm air cushion on all axes
Temperature compensation	Automatic temperature compensation for work piece and all axes
Anti-vibration	Passive elastomer anti-vibration as standard, active pneumatic anti-vibration optional

ENVIRONMENTAL REQUIREMENTS

Ambient temperature	Standard temperature range: 18°C to 22°C Extended temperature range 16°C to 26°C
Temperature gradient	Standard temperature range: 1˚C/h 2˚C/24h 1˚C/m Extended temperature range: 1˚C/h 5˚C/24h 1˚C/m
Operating temperature	10°C to 30°C
Relative humidity	20% to 80% non-condensing
Floor vibration	Passive anti-vibration: Max. 1.27µm peak-to-peak over 3.5 to 90Hz range Active anti-vibration: Specification on request

SUPPLY REQUIREMENTS

Power supply	115V/20A or 230V/13A 50 to 60Hz single phase regulated to within -5% to +10%
Air consumption	Passive anti-vibration: 2.7 SCFM (75 Nl/min) Active anti-vibration: 4.8 SCFM (135 Nl/min)
Air supply	Min. air supply pressure 6.2 bar (90 psi)
Air quality	Dew point: 2°C Air tempurature: Within +/- 2°C of ambient temperature Solids: Max. particle size 1.0um and max. concentration 1mg/cu.m of air Oil/hydrocarbons: Max. concentration 0.1mg/cu.m of air

WARRANTY

12 months' warranty as standard, extended warranty available on request
Unique 10-year original accuracy guarantee as standard
Terms and conditions apply see LK Metrology website for full details

CONFORMITY

Full CE certification in accordance with the following directives:
Machinery directive 2006/42/EC
Low voltage directive 2014/35/EC
Electromagnetic directive 2014/30/EC

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