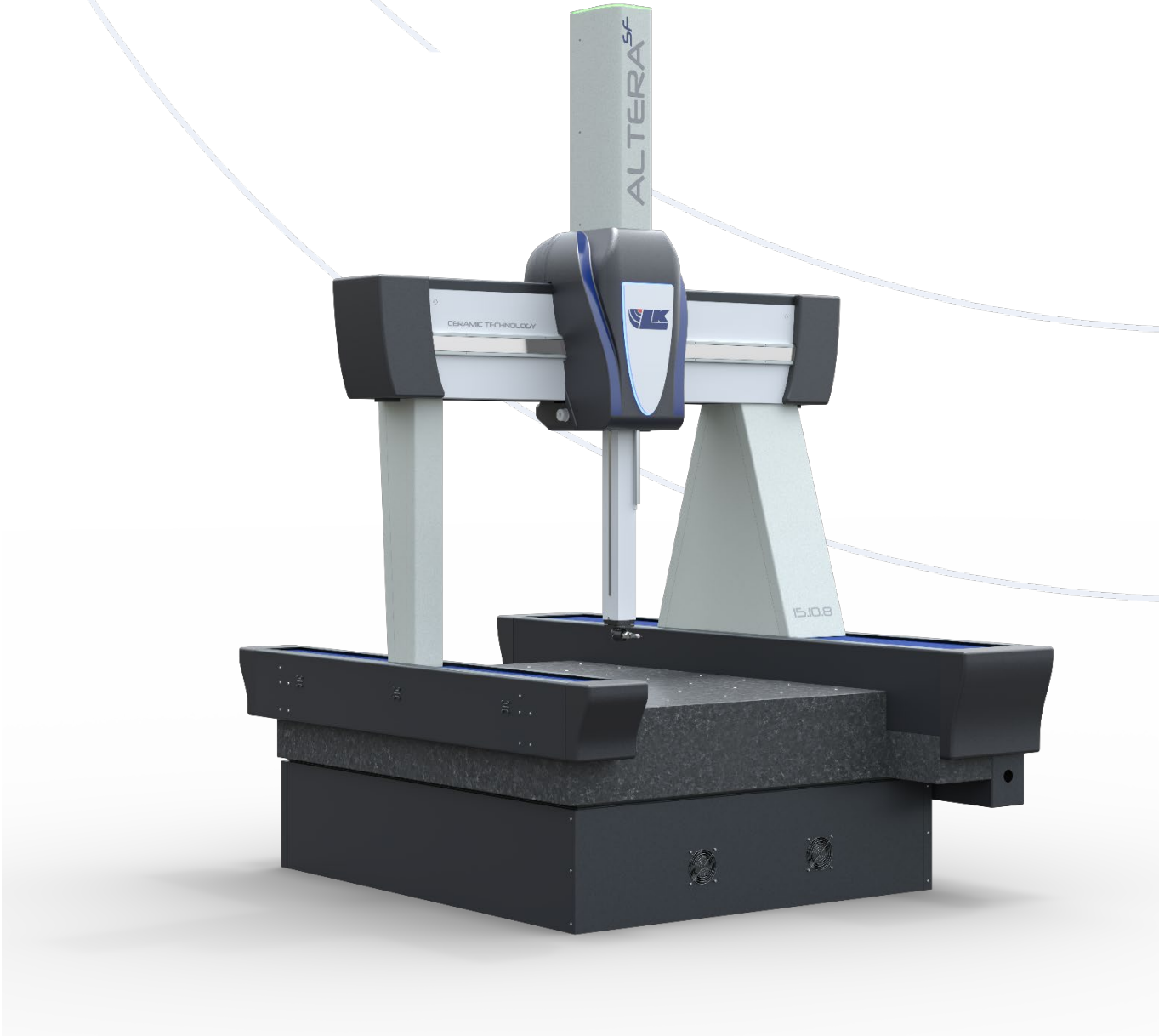
Datasheet

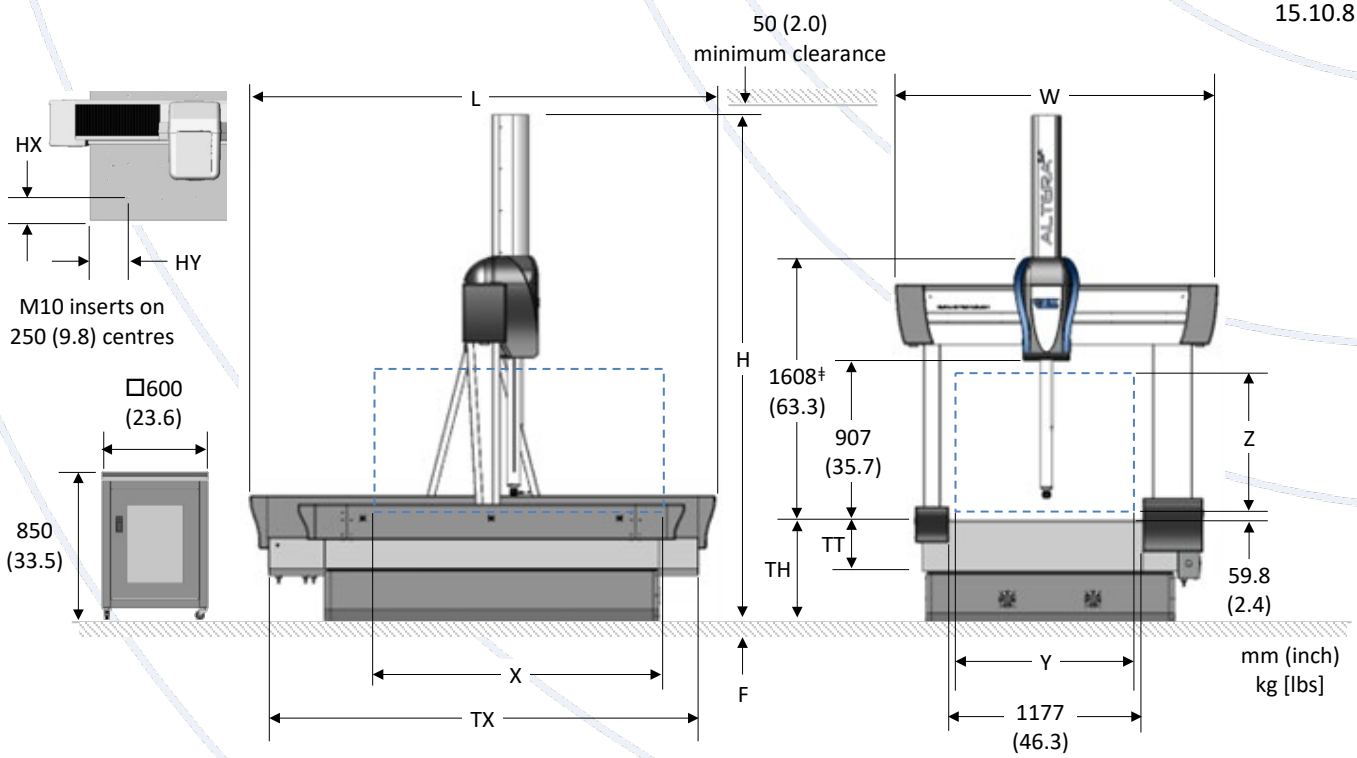
ALTERA SF

Coordinate Measuring Machine

10.10.8

15.10.8



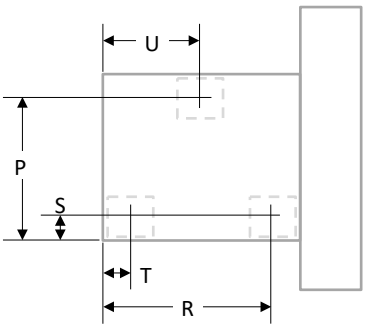


	Travels[1]			Overall			Granite Table					Floor	Part Weight		CMM
	X	Y	Z	L	W	H	TX	TT	TH	HX	HY	F[2]	Std.[3]	Max.[4]	Weight
10.10.8	1016 (40)	1016 (40)	813 (32)	2250 (88.6)	2093 (82.4)	3125 (123.0)	2000 (78.7)	300 (11.8)	710 (28.0)	165 (6.5)	281 (11.1)	50 (2.0)	1025 [2260]	2495 [5501]	2431 [5359]
15.10.8	1525 (60)	1016 (40)	813 (32)	2758 (108.6)	2093 (82.4)	3125 (123.0)	2508 (98.7)	300 (11.8)	710 (28.0)	169 (6.7)	281 (11.1)	70 (2.8)	1503 [3314]	3450 [7606]	3144 [6931]

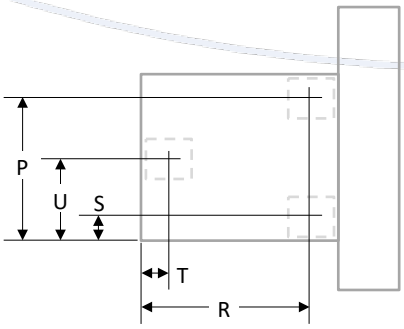
[1]Maximum travel of probe head index point.
[2]Minimum thickness of homogeneous concrete floor with minimum shear strength of 0.4 N/mm2 (58 psi).
[3]Recommended metrological part weight, positioned within the measurement volume.
[4]Recommended maximum part weight, positioned within the measurement volume.
‡Bridge off table access height, excluding lifting equipment and clearances.

TABLE SUPPORT CENTRES

	P	R	S	T	U
10.10.8	1075 (42.3)	1418 (55.8)	175 (6.9)	198 (7.8)	808 (31.8)
15.10.8	1669 (65.7)	1333 (52.5)	169 (6.7)	283 (11.1)	919 (36.2)



ALTERA SF 10.10.8



ALTERA SF 15.10.8

PH10MQ INDEXING HEAD

PROBE HEAD

Head type	Indexing head
Head positions	720
Angular tilt (A-axis)	0° to +105° in 7.5° steps
Angular rotation (B-axis)	0° to ±180° in 7.5° steps
Probe change rack	TSR / ACR3

TOUCH PROBES	**TP200**	**SP25M**
Probe type	Touch trigger	Scanning
Min. stylus diameter	0.3 (0.012)	0.5 (0.02)
Max. stylus length	100 (3.9)	400 (15.7)
Max. probe extension	300 (11.8)	100 (3.9)
Min. probing force	0.02 N	0.1 N
Stylus change rack	SSR200 / SCR200	SSR25 / FCR25

PERIPHERALS	
Controller	NMC300
Controller mounting	Cabinet
Handbox	SOLO
Rotary Table	optional
Automation	optional

TOUCH PROBE ACCURACY[1]

ISO 10360 -2:2009		**TP200**[2] **PH10MQ PLUS**	**SP25M**[3] **PH10MQ PLUS**
Length measurement at 18°C to 22°C	E0 MPE E150 MPE	1.5+L/375	1.5+L/375
Length measurement at 16°C to 26°C	E0 MPE E150 MPE	1.5+L/325	1.5+L/325
Length measurement at 15°C to 30°C	E0 MPE E150 MPE	1.5+L/250	1.5+L/250
Repeatability	R0 MPL	1.5	1.5
ISO 10360 -3:2001[4]			
Rotary table radial	MPE FR	-	-
Rotary table tangent	MPE FT		
Rotary table axial	MPE FA		
ISO 10360 -4:2001[5]			
Probing accuracy scanning mode form	MPE Tij	-	2.4
Probing accuracy scanning mode time	MPT t		59 sec
ISO 10360 -5:2010[5]			
Probing accuracy touch mode form	PFTU MPE	1.4	1.3
ISO 12181-2:2011[6]			
Roundness form	RONt MZCI	-	1.8

DYNAMICS

Acceleration	2185 mm/sec^2
Velocity	831 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 millimetres.
R0 MPL	Maximum repeatability value in microns using E0 values.
MPE FR MPE FT MPE FA	Maximum radial, tangential and axial errors respectively in microns.
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.
RONt MZCI	Maximum complete roundness error in microns.

[2] TP200 standard force module, Ø4x10 mm stainless steel shaft stylus, Ø4x30 mm tungsten carbide shaft stylus (En MPE only), Ø5x20 mm star tungsten carbide shaft stylus (P*TM MPE only), touch velocity 0.1 m/min, approach 10 mm (En MPE only), 7 mm (PFTU MPE only).

[3] SP25M SM25-1 module, SH25-1 stylus holder, Ø4x50 mm tungsten carbide shaft stylus, Ø3x21 mm stainless steel shaft stylus (P*TM MPE only), touch velocity 0.1 m/min, scanning velocity 0.5 m/min, approach 10 mm (En MPE only), 7 mm (PFTU MPE only), 50 UPR 2σ filter. Use of a FCR25 TC temperature-controlled change rack is recommended for optimum performance when changing the SP25M scanning modules.

[4] Rotary table accuracy specifications using manufacturer-specified grade 1 rotary table, Δh=200mm and r=200mm (non-integrated)

[5] Probing accuracy with test artifact positioned at any location within the measurement volume.

[6] Roundness accaurcy using Ø100 ring gauge artifact positioned on the CMM table in the centre of the measuring volume and orientated in the XY plane. SP25M SM25-1 module, SH25-1 stylus holder, Ø4x50 mm tungsten carbide shaft stylus, approach 5 mm, scanning velocity 0.5 m/min, 50 Hz UPR 2σ filter.

TECHNICAL FEATURES

X axis guideway	Granite dovetail guideway with positive pressure bellows covers on primary bridge leg Granite guideway with positive pressure bellows covers on secondary bridge leg
Y axis guideway	Mono-crystalline alumina ceramic guideway 375 x 120 mm (14.8 x 4.7 inch) Positive pressure bellows covers and steel cover protecting the scale
Z axis guideway	Mono-crystalline alumina ceramic guideway 92 x 80 mm (3.6 x 3.1 inch) Top-hat cover with 360 degree CMM status warning lights
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	Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor
Linear encoders	0.05 µm glass ceramic scales and optical readhead system
Counterbalance	Fully adjustable pneumatic Z axis counterbalance
Granite table	Granite table flatness according to DIN 876 Grade 0 with under table air circulation system
Table inserts	Grid pattern of M10 x 1.5 threaded table inserts on 250 mm (9.8 inch) centre spacing
Air bearings	Single orifice multi-groove air bearings with 5 µm air cushion on all axes
Temperature compensation	Automatic temperature compensation for each CMM axis and 2 workpiece sensors
Anti-vibration	Passive elastomer anti-vibration as standard, intelligent pneumatic anti-vibration optional

ENVIRONMENTAL REQUIREMENTS

Ambient temperature	Standard temperature range: 18°C to 22°C Extended temperature range: 16°C to 26°C Shop Floor temperature range 15°C to 30°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 Shop Floor temperature range: 1˚C/h 5˚C/24h 1˚C/m
Operating temperature	15°C to 30°C
Relative humidity	20% to 80% non-condensing
Floor vibration	Passive anti-vibration: Max. 1.27 µm peak-to-peak over 3.5 to 90 Hz range Active anti-vibration: Specification on request
Noise Level	Max. 70dB(A)

SUPPLY REQUIREMENTS

Power supply	115 V/20 A or 230 V/13 A 50 to 60 Hz single phase regulated to within -5% to +10%				
Power cable	Region	Overall dia.	Stranding	CSA/Gauge	Conductor Colours
	Rest of world	6.9 mm	32/02	1 mm^2	blue, brown, green/yellow
	USA (115 V)	0.26 inch	41/34	18AWG	black, white, green
Air consumption	Passive anti-vibration: 4.3 SCFM (125 NLPM) inc. rotary table: 14.3 SCFM (410 NLPM) Active anti-vibration: 6.5 SCFM (185 NLPM) inc. rotary table: 16.5 SCFM (470 NLPM)				
Air supply	Min. air supply pressure 6.2 bar (90 psi)				
Air quality	Dew point: 2°C Solids: Max. particle size 1.0 um and max. concentration 1 mg/cu.m Oil/hydrocarbons: Max. concentration 0.1 mg/cu.m				

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