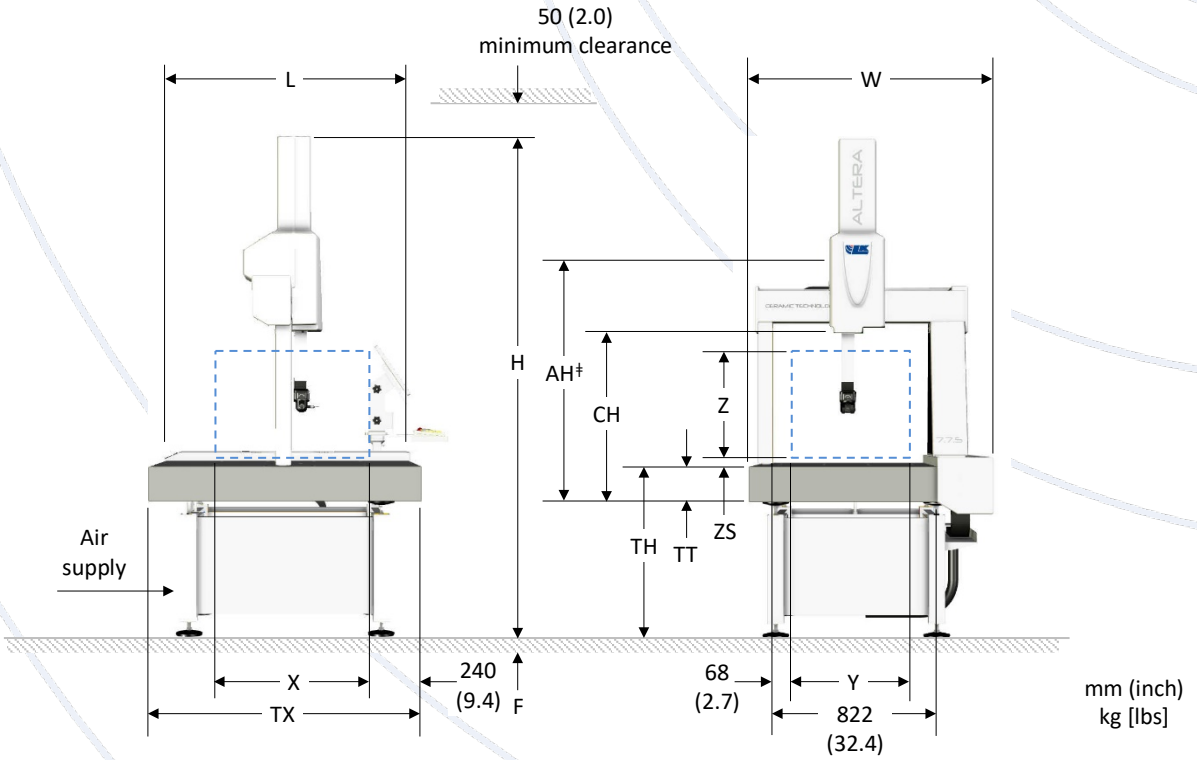
# Datasheet

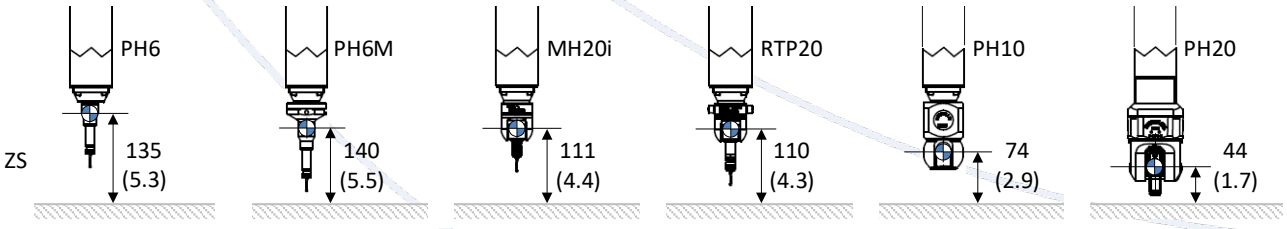
# ALTERA C 7.7.5

Coordinate Measuring Machine




Model shown: Altera C 7.7.5 with optional integrated controller and monitor arm.



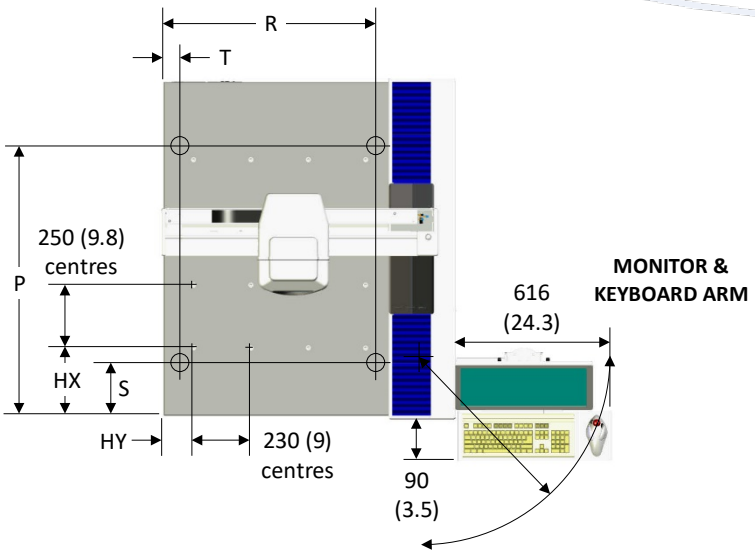




| | Travels[1] | | | Overall | | | Granite Table | | | | | Floor[2] | Clearance | Access | Table Loading | | CMM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | X | Y | Z | L | W | H | TX | TT | TH | HX | HY | F | CH | AH‡ | Std. | Max.[3] | Weight |
| **7.7.5** | 700 | 650 | 500 | 1360 | 1180 | 2533 | 1330 | 170 | 840 | 350 | 120 | 50 | 688 | 1335 | 280 | 650 | 1018 |
| | (28) | (26) | (20) | (53.5) | (46.5) | (99.7) | (52.4) | (6.7) | (33.1) | (13.8) | (4.7) | (2.0) | (27.1) | [2943] | [617] | [1433] | [2244] |

[1]Maximum travel of probe head reference 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 area defined by Table Support Centres.
‡Height of bridge assembly for installation access excluding lifting equipment and clearances.

**TABLE SUPPORT CENTRES**

| | P | R | S | T |
|---|---|---|---|---|
| **7.7.5** | 1140 | 910 | 190 | 120 |
| | (44.9) | (35.8) | (7.5) | (4.7) |



| **TOUCH PROBE ACCURACY**[1] **ISO 10360 -2:2009** | | **TP20**[2] **PH10T/M PLUS MH20i/RTP20 PH6/PH6M** | **TP200**[3] **PH10T/M PLUS PH6/PH6M** | **SP25M**[4] **PH10M PLUS PH6M** | **PH20**[5] |
|---|---|---|---|---|---|
| Length measurement at 18°C to 22°C | E0 MPE<br>E150 MPE | 1.7+L/333 | 1.7+L/333 | 1.7+L/333 | 1.7+L/333 |
| Repeatability | R0 MPL | 1.5 | 1.5 | 1.5 | 1.7 |
| **ISO 10360 -4:2001** | | | | | |
| Probing accuracy scanning mode | form<br>time | MPE Tij<br>MPT t | - | - | 4.0<br>59 sec | - |
| **ISO 10360 -5:2010** | | | | | |
| Probing accuracy touch mode | form | PFTU MPE | 2.2 | 1.7 | 1.7 | 2.2 |

**DYNAMICS**

| | |
|---|---|
| Acceleration | 1900 mm/sec² |
| Velocity | 720 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 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,
Ø4x30mm tungsten carbide shaft stylus (En MPE only), Ø4x10mm stainless steel shaft stylus (PFTU MPE only), touch velocity 0.1m/min, approach 5mm, 25-point CAMIO Enhanced Probe Qualification with pre-travel variation compensation.

[3] TP200 standard force module, Ø4x30mm tungsten carbide shaft stylus (En MPE only), Ø4x10mm stainless steel shaft stylus (PFTU MPE only), touch velocity 0.1m/min, approach 5mm.

[4] SP25M SM25-1 module, SH25-1 stylus holder, Ø4x50mm tungsten carbide shaft stylus, touch velocity 0.1m/min, approach 5mm, scanning velocity 0.5m/min, 50Hz UPR 2σ filter.

[5] TP20 standard force module, EM1 module (E150 MPE only), Ø4x50mm carbon fibre shaft stylus (E0 MPE only), Ø4x30mm tungsten carbide shaft stylus (E150 MPE only), Ø4x10mm stainless steel shaft stylus (PFTU MPE only), touch velocity 0.1m/min, approach 5mm.

| **PROBE HEADS** | **PH6** | **MH20i** | **RTP20** | **PH10T PLUS** | **PH20** |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| Head type | Fixed (Vertical) | Manual Indexing | Automatic Indexing | Motorised Indexing | 5-Axis Continuous |
| Head positions | - | 168 | 168 | 720 | Infinite |
| Angular tilt | - | 0° to +90° in 15° steps | 0° to +90° in 15° steps | 0° to +105° in 7.5° steps | ±115° |
| Angular rotation | - | ±180° in 15° steps | ±180° in 15° steps | 0° to ±180° in 7.5° steps | Infinite |

| **TOUCH PROBES** | **TP20** | **TP200** | **Integral** | **Integral** | **TP20** | **TP200** | **Integral** |
|---|---|---|---|---|---|---|---|
| Min. stylus diameter | 0.3 (0.012) | 0.3 (0.012) | 0.3 (0.012) | 0.3 (0.012) | 0.3 (0.012) | 0.3 (0.012) | 0.3 (0.012) |
| Max. stylus length | 60 (2.4) | 100 (3.9) | 60 (2.4) | 60 (2.4) | 60 (2.4) | 100 (3.9) | 60 (2.4) |
| Max. probe extension | 300 (11.8) | 300 (11.8) | 300 (11.8) | 300 (11.8) | 300 (11.8) | 300 (11.8) | 75 (3.0) |
| Min. probing force | 0.055N | 0.02N | 0.055N | 0.055N | 0.055N | 0.02N | 0.055N |
| Stylus change rack | MCR20 | SCR200 | MCR20 | MCR20 | MCR20 | SCR200 | TCR20 |

| **PERIPHERALS** | | | | | |
|---|---|---|---|---|---|
| Controller | NMC100 | NMC100 | NMC100 | NMC100 | UCC-T5 |
| Handbox | SOLO | SOLO | SOLO | SOLO | MCU-5 |

– Not available

mm (inch)

| **PROBE HEADS** | **PH6M** | **PH10M PLUS** |
|---|---|---|
| |  |  |
| Head type | Fixed (Vertical) | Motorised Indexing |
| Head positions | - | 720 |
| Angular tilt | - | 0° to +105° in 7.5° steps |
| Angular rotation | - | 0° to ±180° in 7.5° steps |
| Probe change rack | MRS ACR3 | MRS ACR3 |

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

| **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 | | 22µm | 60µm | 65µm | 42µm |
| Standoff | | 68 | 125 | 107/202 | 135 |

| **PERIPHERALS** | | |
|---|---|---|
| Controller | NMC300 | NMC300 |
| Handbox | SOLO | SOLO |
| 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 162 x 100mm (6.4 x 3.9inch) |
| Z axis guideway | Mono-crystalline alumina ceramic guideway 63.5 x 63.5mm (2.5 x 2.5inch) 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 | Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor |
| Z axis friction drive | Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor |
| Linear encoders | 0.05µm gold plated tape scale and optical read-head Renishaw VIONiC™ system |
| Counterbalance | Fully adjustable pneumatic Z axis counterbalance |
| Granite table | Granite table flatness according to DIN 876 |
| Table inserts | Grid of M10 x 1.5 threaded table inserts X-axis pitch 250mm (9.8inch) Y-axis pitch 230mm (9inch) |
| 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 |
| Temperature gradient | Standard temperature range: 1˚C/h 2˚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<br>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% | | | | |
| Power cable | Region | Overall dia. | Stranding | CSA/Gauge | Conductor Colours |
| | Rest of world | 6.9mm | 32/02 | 1mm² | blue, brown, green/yellow |
| | USA (115V) | 0.26 inch | 41/34 | 18AWG | black, white, green |
| Air consumption | Passive anti-vibration: 3.3 SCFM (94 Nl/min)<br>Active anti-vibration: On request | | | | |
| Air supply | Min. air supply pressure 6.2 bar (90 psi) | | | | |
| Air quality | Dew point: 2°C<br>Air temperature: Within +/- 2°C of ambient temperature<br>Solids: Max. particle size 1.0um and max. concentration 1mg/cu.m of air<br>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

VIONiC trademark of Renishaw PLC.
Copyright © 2020 LK Metrology. All Rights Reserved. For general information only and subject to change without prior notice.