



# Datasheet

## MAXIMA

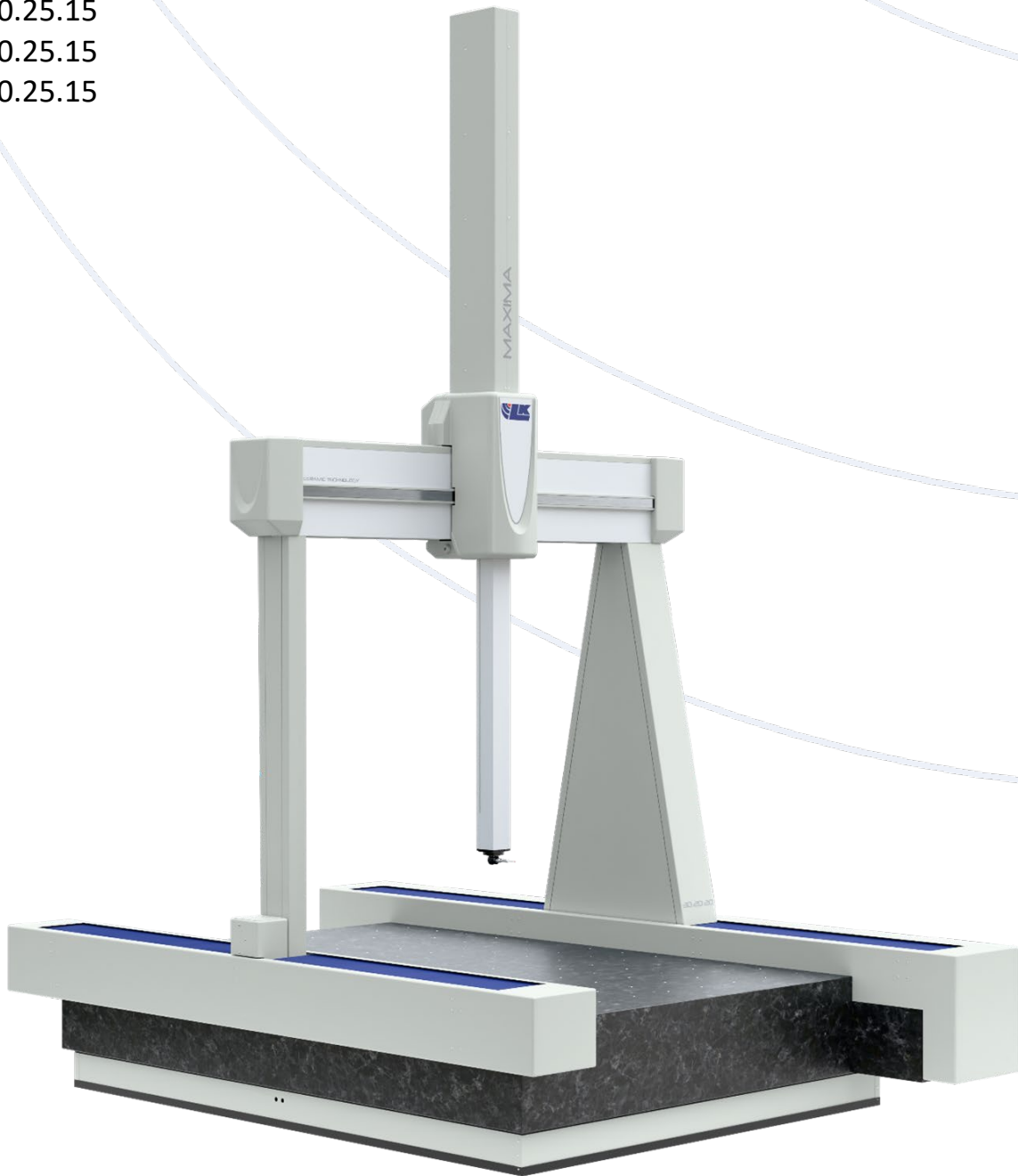
Coordinate Measuring Machine

30.25.15

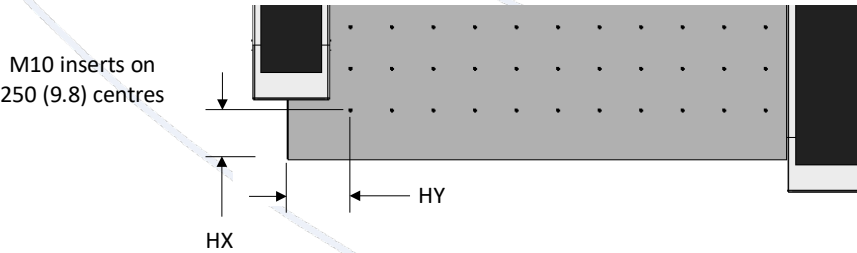
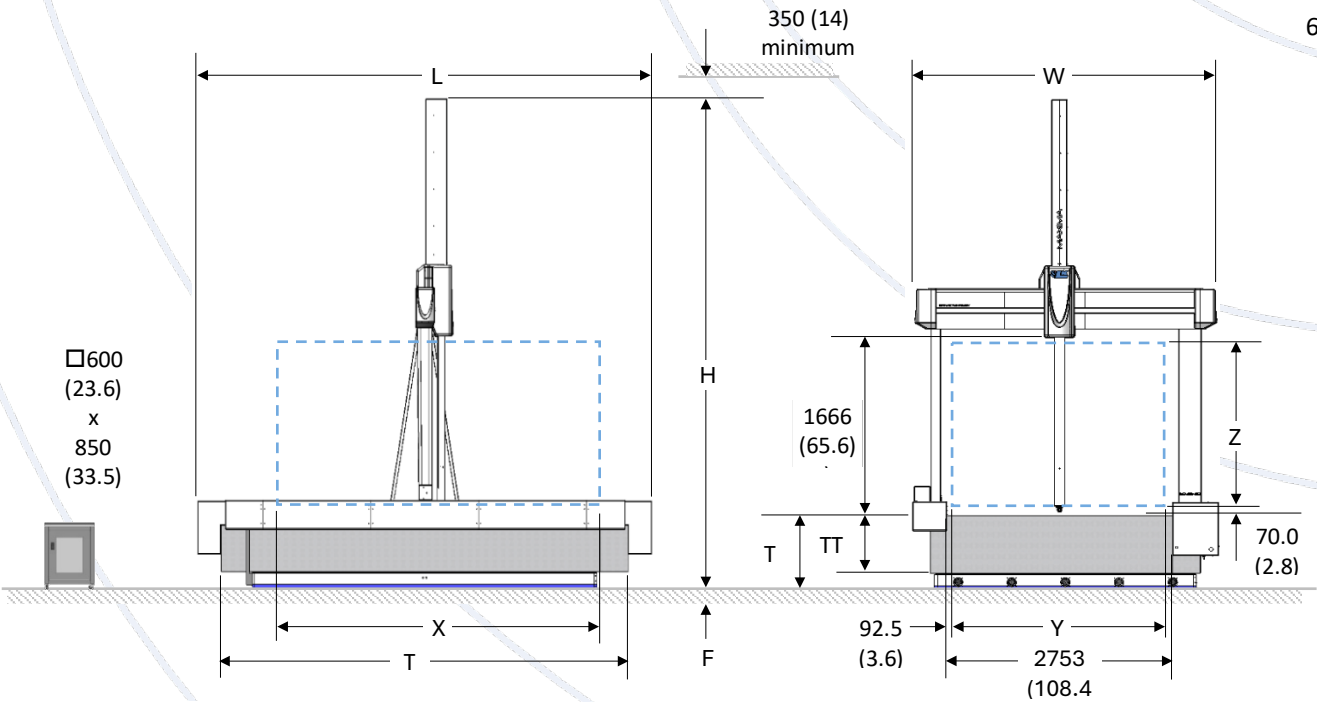
40.25.15

50.25.15

60.25.15



TECHNICAL DATA | Dimensions



|          | Travel <sup>1</sup> |               |                | Overall         |                 |                 | Granite Table   |               |                |               |               | Floor          | Part Weight           | CMM               |
|----------|---------------------|---------------|----------------|-----------------|-----------------|-----------------|-----------------|---------------|----------------|---------------|---------------|----------------|-----------------------|-------------------|
|          | X                   | Y             | Z <sup>2</sup> | L               | W               | H               | TX              | TT            | TH             | HX            | HY            | F <sup>3</sup> | Combined <sup>4</sup> | Weight            |
| 30.25.15 | 3048<br>(120)       | 2540<br>(100) | 1524<br>(60)   | 4878<br>(192.0) | 3718<br>(146.4) | 4770<br>(187.8) | 4465<br>(175.8) | 500<br>(19.7) | 710<br>(28.0)  | 283<br>(11.1) | 322<br>(12.7) | 248<br>(9.8)   | 4840<br>[10670]       | 17304<br>[38149]  |
| 40.25.15 | 4064<br>(160)       | 2540<br>(100) | 1524<br>(60)   | 5895<br>(232.1) | 3718<br>(146.4) | 4870<br>(191.7) | 5480<br>(215.7) | 600<br>(23.6) | 810<br>(31.9)  | 290<br>(11.4) | 322<br>(12.7) | 317<br>(12.5)  | 6097<br>[13442]       | 26166<br>[57686]  |
| 50.25.15 | 5080<br>(200)       | 2540<br>(100) | 1524<br>(60)   | 7248<br>(285.4) | 3718<br>(146.4) | 4970<br>(195.7) | 6496<br>(255.7) | 700<br>(27.6) | 910<br>(35.8)  | 298<br>(11.7) | 322<br>(12.7) | 392<br>(15.4)  | 7730<br>[17042]       | 36899<br>[81348]  |
| 60.25.15 | 6096<br>(240)       | 2540<br>(100) | 1524<br>(60)   | 8272<br>(325.7) | 3718<br>(146.4) | 5070<br>(199.6) | 7520<br>(296.1) | 800<br>(31.5) | 1010<br>(39.8) | 310<br>(12.2) | 322<br>(12.7) | 470<br>(18.5)  | 9672<br>[21323]       | 49552<br>[109243] |

<sup>1</sup>Maximum travel of probe head reference centre point.  
<sup>2</sup>Z travel for PH10MQ PLUS only. For SP80 reduce by 100 mm (3.9").  
<sup>3</sup>Minimum thickness of homogeneous concrete floor with minimum shear strength of 0.4 N/mm<sup>2</sup> (58 psi).  
<sup>4</sup>Combined recommended metrological part weight and recommended maximum part weight, positioned within the measurement volume.

## TECHNICAL DATA | Specification

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| TOUCH PROBE ACCURACY <sup>1</sup>  |                    |  | TP20 <sup>2</sup><br>PH10MQ PLUS | TP200 <sup>3</sup><br>PH10MQ PLUS | SP25M <sup>4</sup><br>PH10MQ PLUS | SP80 <sup>5</sup> |
|------------------------------------|--------------------|--|----------------------------------|-----------------------------------|-----------------------------------|-------------------|
| ISO 10360 -2:2009                  |                    |  |                                  |                                   |                                   |                   |
| Length measurement at 18°C to 22°C | E0 MPE<br>E150 MPE |  | 4.7+L/350                        | 3.2+L/350                         | 3.2+L/350                         | 3.0+L/350         |
| Length measurement at 16°C to 26°C | E0 MPE<br>E150 MPE |  | 5.0+L/230                        | 3.5+L/230                         | 3.5+L/230                         | 3.3+L/230         |
| Repeatability                      | R0 MPL             |  | 3.2                              | 3.2                               | 3.2                               | 3.2               |

### ISO 10360 -3:2000<sup>6</sup>

|              |         |        |     |     |     |     |
|--------------|---------|--------|-----|-----|-----|-----|
| Rotary table | radial  | MPE FR | 8.0 | 6.5 | 6.5 | 6.3 |
|              | tangent | MPE FT | 9.5 | 8.0 | 8.0 | 7.8 |
|              | axial   | MPE FA | 7.8 | 6.3 | 6.3 | 6.1 |

### ISO 10360 -4:2001

| ISO 10360 -4:2001 |      |                     |   |   | Accuracy | Efficiency | Accuracy | Efficiency |
|-------------------|------|---------------------|---|---|----------|------------|----------|------------|
| Probing accuracy  | form | MPE T <sub>ij</sub> | - | - | 3.9      | 6.4        | 3.7      | 6.2        |
| scanning mode     | time | MPT <sub>t</sub>    |   |   | 65 sec   | 55 sec     | 68 sec   | 58 sec     |

### ISO 10360 -5:2010

|                                  |          |          |     |     |     |     |
|----------------------------------|----------|----------|-----|-----|-----|-----|
| Probing accuracy touch mode      | form     | PFTU MPE | 5.1 | 3.1 | 2.9 | 2.7 |
| Multi stylus fixed head position | form     | PFTM MPE | -   | -   | -   | -   |
|                                  | size     | PSTM MPE | -   | -   | -   | -   |
|                                  | location | PLTM MPE | -   | -   | -   | -   |
| Multi stylus articulating head   | form     | PSTE MPE | -   | -   | -   | -   |
|                                  | size     | PSTE MPE | -   | -   | -   | -   |
|                                  | location | PLTE MPE | -   | -   | -   | -   |

### ISO 12181-2:2011

|           |      |           |  |  |     |     |
|-----------|------|-----------|--|--|-----|-----|
| Roundness | form | R0NT MZCI |  |  | 3.4 | 3.2 |
|-----------|------|-----------|--|--|-----|-----|

### DYNAMICS

|                      |                         |
|----------------------|-------------------------|
| Maximum Acceleration | 831 mm/sec <sup>2</sup> |
| Maximum Velocity     | 462 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.

<sup>1</sup> Touch probe accuracy specifications using manufacturer specified test length and test sphere artifacts with empirical probe 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, artifact in centre of measuring volume, vertical position defined by holding device.

PFTU MPE

Maximum single stylus form error in microns using touch point mode, artifact in centre of measuring volume, vertical position defined by holding device.

PSTM MPE

Maximum multi stylus fixed head form error in microns using touch point mode, artifact in centre of measuring volume, vertical position defined by holding device.

PSTE MPE

Maximum multi stylus articulating head form error in microns using touch point mode, artifact in centre of measuring volume, vertical position defined by holding device.

R0NT MZCI

Maximum roundness form error in microns using touch point mode, artifact in centre of measuring volume, vertical position defined by holding device.

<sup>2</sup> TP20 standard force module, EM2 module (PH20 E<sub>n</sub> MPE only), Ø4x10 mm stainless steel shaft stylus, Ø4x30 mm tungsten carbide shaft stylus (E<sub>n</sub> MPE only), Ø5x20 mm star tungsten carbide shaft stylus (P\*TM MPE only), touch velocity 0.1 m/min, approach 10 mm (E<sub>n</sub> MPE only), 7 mm (PFTU MPE only).

<sup>3</sup> TP200 standard force module, Ø4x10 mm stainless steel shaft stylus, Ø4x30 mm tungsten carbide shaft stylus (E<sub>n</sub> MPE only), Ø5x20 mm star tungsten carbide shaft stylus (P\*TM MPE only), touch velocity 0.1 m/min, approach 10 mm (E<sub>n</sub> MPE only), 7 mm (PFTU MPE only).

<sup>4</sup> 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 (E<sub>n</sub> 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.

<sup>5</sup> SP80 stylus holder, Ø8x100 mm carbon fibre shaft stylus, Ø8x150 mm carbon fibre shaft stylus and stainless-steel stylus extension (E<sub>n</sub> MPE only), touch vel. 0.1 m/min, scanning vel. 0.5 m/min, approach 10 mm (E<sub>n</sub> MPE only), 7 mm (PFTU MPE only), 50 UPR 2σ filter.

<sup>6</sup> Rotary table accuracy specifications using manufacturer-specified, surface mounted Grade 1 rotary table, Δh=200mm and r=200mm.

## TECHNICAL DATA | Probing

### MAXIMA

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| PROBE HEADS | PH10MQ PLUS                                                                       | SP80                                                                                |
|-------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|             |  |  |

|                   |                           |            |
|-------------------|---------------------------|------------|
| Head type         | Indexing head             | Fixed head |
| Head positions    | 720                       | -          |
| Angular tilt      | 0° to +105° in 7.5° steps | -          |
| Angular rotation  | 0° to ±180° in 7.5° steps | -          |
| Probe change rack | TSR/MRS2                  | MRS2       |

| TOUCH PROBES         | TP20          | TP200         | SP25M       | SP80        |
|----------------------|---------------|---------------|-------------|-------------|
| Probe type           | Touch trigger | Touch trigger | Scanning    | Scanning    |
| Min. stylus diameter | 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)     | 400 (15.7)  | 1000 (39.4) |
| Max. probe extension | 300 (11.8)    | 300 (11.8)    | 100 (3.9)   | -           |
| Min. probing force   | 0.055 N       | 0.02 N        | 0.1 N       | 2.2 N       |
| Stylus change rack   | SSR20/MCR20   | SSR200/SCR200 | SSR25/FCR25 | SCP80       |

| PERIPHERALS         |         |         |
|---------------------|---------|---------|
| Controller          | NMC300  | NMC300  |
| Controller mounting | Cabinet | Cabinet |
| Handbox             | SOLO    | SOLO    |
| Rotary Table        | ●       | ●       |
| Automation          | ●       | ●       |

- Optional
- Not available

mm (inch)

### TECHNICAL FEATURES

|                          |                                                                                                                                                                                                      |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X axis guideway          | Granite dovetail guideway with bellows covers on primary leg<br>Granite guideway with bellows covers on secondary leg                                                                                |
| Y axis guideway          | Mono-crystalline alumina ceramic guideway 450 mm x 120 mm (17.7 x 4.7) with bellows covers<br>A steel cover protects the Y-axis scale from airborne contaminants                                     |
| Z axis guideway          | Mono-crystalline alumina ceramic guideway 127 mm x 127 mm (5.0 x 5.0) with top-hat cover                                                                                                             |
| X axis friction drive    | Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor on primary leg<br>Chrome-plated hardened steel drive bar with preloaded V roller and DC servomotor on secondary leg |
| 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 stainless steel ribbon scale and optical readhead system                                                                                                                                     |
| Counterbalance           | Fully adjustable pneumatic Z axis counterbalance                                                                                                                                                     |
| 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 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 workpiece and all axes                                                                                                                                        |
| Anti-vibration           | Active pneumatic anti-vibration as standard                                                                                                                                                          |

### ENVIRONMENTAL REQUIREMENTS

|                       |                                                                                                    |
|-----------------------|----------------------------------------------------------------------------------------------------|
| Ambient temperature   | Standard temperature range: 18°C to 22°C<br>Extended temperature range: 16°C to 26°C               |
| Temperature gradient  | Standard temperature range: 1°C/h 2°C/24h 1°C/m<br>Extended 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       | Active anti-vibration: Specification on request                                                    |
| Noise level           | A-weighted sound level does not exceed 70 dB(A), in compliance with Directive 2006/42/EC           |

### 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 <sup>2</sup> | blue, brown, green/yellow |
|                 | USA (115 V)                                                                       | 0.26 inch    | 41/34     | 18 AWG            | Black, white, green       |
| Air consumption | Active anti-vibration: on request inc. rotary table: on request                   |              |           |                   |                           |
| Air pressure    | Min. air supply pressure 6.2 bar (90 psi)                                         |              |           |                   |                           |
| Air temperature | Ambient temperature ± 2°C                                                         |              |           |                   |                           |
| Air quality     | In accordance with ISO 8573-1:2010 [1:4:2]                                        |              |           |                   |                           |

### 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