3D-Coordinate Measuring Machine (CMM)
LH 108
STANDARD / PREMIUM / PREMIUM-SELECT

Technical Data
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Short description

• CNC-bridge design measuring machine capable for touch-trigger and scanning probes; for optical or continuous and indexing probe systems
• Dynamic and high precision series with air bearings in all axis
• All granite guideways accurately hand-lapped
• Compact design. Operator workstation with integrated controller and computer
• CMM available in multiple sizes for the optimal selection of the required measurement volume

Application areas

• In production, quality control, process and production control; in reverse engineering and model making
• Geometric and free-form components
• Both series and individual measurements
• Palletized operation possible

Features

• The Y-axis guideway is machined directly in the base plate, providing optimal long-term stability
• Pre-stressed, encompassing air bearings in all axes
• Passive vibration dampers
• Active pneumatic vibration damping optionally available and field retrofittable
• Compact control panel with central, logarithmic joystick, “mouse function” and context-sensitive function buttons. Selectable joystick’s axis assignment. Wireless version optionally available.
• The X- and Y-guideways feature bellows protections against contamination
• High-speed-dynamic servo drives with position monitoring, combined friction power transmission
• Three-axis contouring controller with intelligent “lookahead” function for application-optimized trajectory
• Manual temperature compensation in Standard version
• Premium- and Premium-Select version with automatic temperature compensation on all axes and work piece
• Two-stage speed selection and variable speed adjustment (override 0-100%) in all operation modes, resulting in sensitive movement via joystick or in CNC mode

Probe systems

• PH10M / PH10T motorized indexing head
• TP200 touch-trigger probe, highly precise and suitable for styli up to 100 mm in length. Styli can be changed via optional tool changer
• Touch-trigger probe TP20, Stylus module changeable via optional tool changer
• PH10M motorized indexing head
• SP25M scanning and single-point probe, precise and flexible for styli lengths of up to 400 mm. Probe module and styli can be changed via optional tool changer.
• Shapetracer: 3D Line Scanner to report and handle point clouds
• SP80 scanning probe head, highly precise for larger probe lengths. For scanning and single-point probing. Stylus combinations can be changed via optional tool changer
• PH20™: Continuous 5-axis touch-trigger system with “head touch”
• REVO: 5-axis head and probe system for scanning of complex contours and high throughput
## Measuring Ranges, Weights

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<thead>
<tr>
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<tbody>
<tr>
<td>X [mm]</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
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<tr>
<td>Y* [mm]</td>
<td>1200 1600 2000 3000</td>
<td>1200 1600 2000 3000</td>
<td>1200 1600 2000 3000</td>
</tr>
<tr>
<td>Z [mm]</td>
<td>800</td>
<td>800</td>
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<tr>
<td>Machine weight [kg]</td>
<td>4480 5540 6925 10390</td>
<td>4480 5540 6925 10390</td>
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## General Requirements

### Electric
- Single-phase AC 1P+N+PE, 115/230 V ± 10 %, 50/60 Hz, max. 1000 VA, acc. to EN 60204/1

### Compressed air
- Supply pressure 6-10 bar, pre-filtered, quality according to ISO 8573-1: Class 4 or better

#### Air consumption
- Passive: [Nm³/min] Ø67 (max.)
- Active: [Nm³/min] Ø91 (max.)

### Measuring Accuracy

#### Measurement system
- Photoelectric scale system, optical division 20 µm

#### Resolution [µm]
- 0.1
- 0.05

#### Probing uncertainty
- MPEP [µm]
  - TP20 2.7
  - TP200 2.3
  - SP25/80 2.0
  - REVO 2.3
  - TP20 1.9
  - SP25/80 1.7
  - REVO 2.0
  - SP25/80 1.6

#### Volumetric length measuring uncertainty
- MPE [µm]
  - TP20 1.0
  - TP200 0.8
  - SP25/80 0.7
  - REVO 0.9
  - TP20 0.7
  - SP25/80 0.5
  - REVO 0.6

#### Scanning probe uncertainty
- MPE[THP] [µm]
  - SP25/80 2.6
  - REVO 2.9
  - SP25/80 2.3
  - REVO 2.6
  - SP25/80 2.2

#### Total measuring time for THP
- MPT [sec]
  - 72

## Operating Environment

### Operating temperature [°C]
- 15-30

### Temperature range for MPE
- (Standard/Premium) 18-22 °C, ΔT: 1 K/h, 1 K/m, 2 K/d
- (Premium-Select) 19-21 °C, ΔT: 0.5 K/h, 0.5 K/m, 1 K/d

### Relative humidity [%]
- 40-70

## Dynamics

### Joystick operation
- \(v_{\text{max}} \text{ [mm/s]}\)
  - 0-20 (creep mode), 0-100 (normal)

### CNC mode
- \(v_{\text{max}} \text{ [mm/s]}\)
  - 300 axial, 520 volumetric
- \(a_{\text{max}} \text{ [mm/s²]}\)
  - 600 axial, 1000 volumetric

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1: According to DIN EN ISO 10360-2 / Maximum Permissible Error MPE
- SP25A with Module SMD5-1 and Styli Ø 4 x 21 mm
- SP80 and Styli Ø 5 x 50 mm
- TP200 with Standard Force Module and Styli Ø 4 x 21 mm
- TP20 with Standard Force Module and Styli Ø 4 x 10 mm
- REVO with RSP3-3 and Styli Ø 4 x 21 mm

2: According to DIN EN ISO 10360-4 / Maximum Permissible Error MPE
- SP25A with Module SMD5-1 and Styli Ø 4 x 21 mm
- SP80 and Styli Ø 5 x 50 mm
- TP200 with Standard Force Module and Styli Ø 4 x 21 mm
- TP20 with Standard Force Module and Styli Ø 4 x 10 mm
- REVO with RSP3-3 and Styli Ø 4 x 21 mm

3: According to DIN EN ISO 10360-4 / Maximum Permissible Error MPE
- SP25A with Module SMD5-1 and Styli Ø 4 x 21 mm
- SP80 and Styli Ø 5 x 50 mm
- TP200 with Standard Force Module and Styli Ø 4 x 21 mm
- TP20 with Standard Force Module and Styli Ø 4 x 10 mm
- REVO with RSP3-3 and Styli Ø 4 x 21 mm

* More Y-measuring ranges on request

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### Overall Dimensions [mm]

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<thead>
<tr>
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<tbody>
<tr>
<td>Measuring ranges</td>
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<tr>
<td>Inspection room dimension</td>
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</tbody>
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