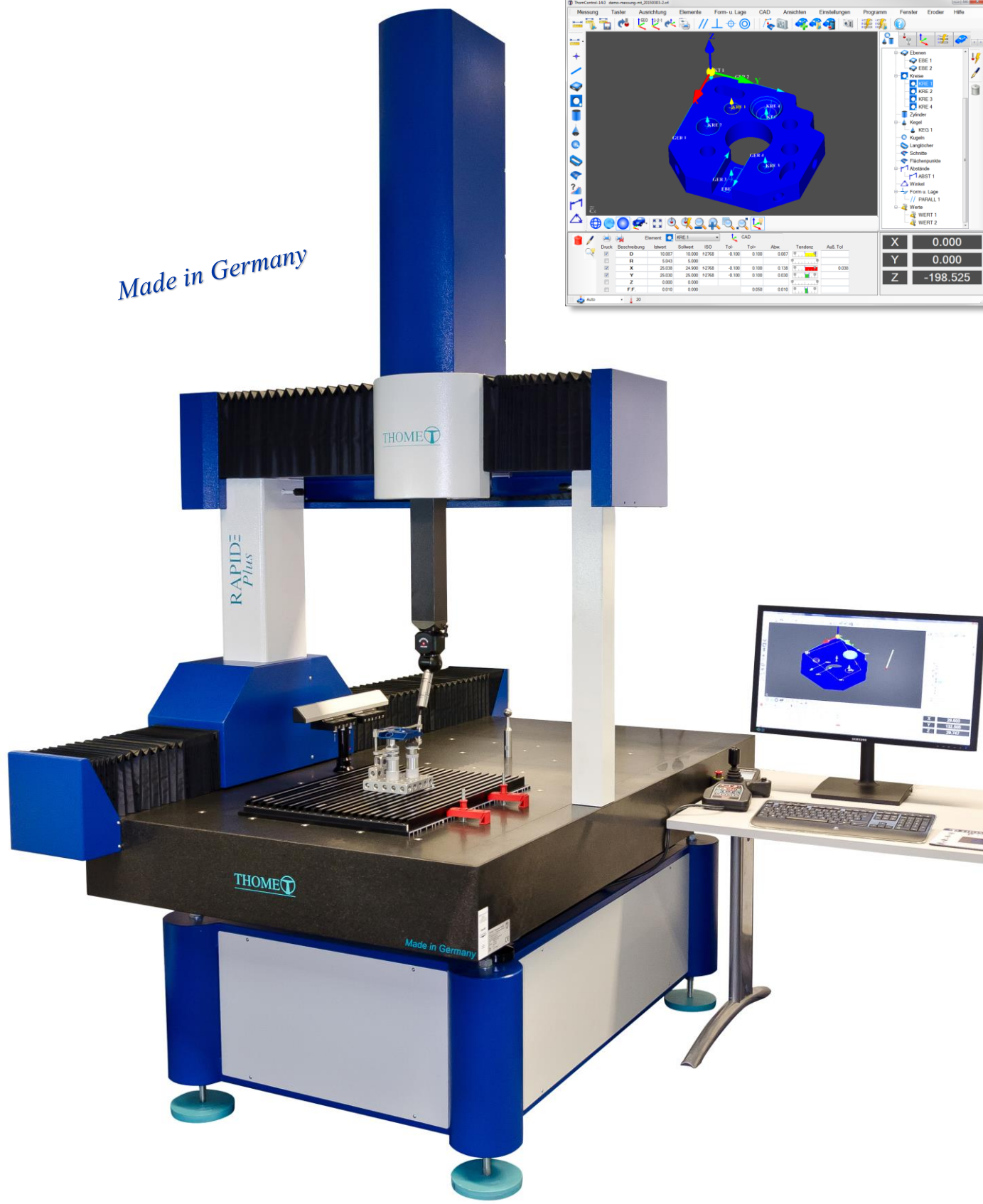
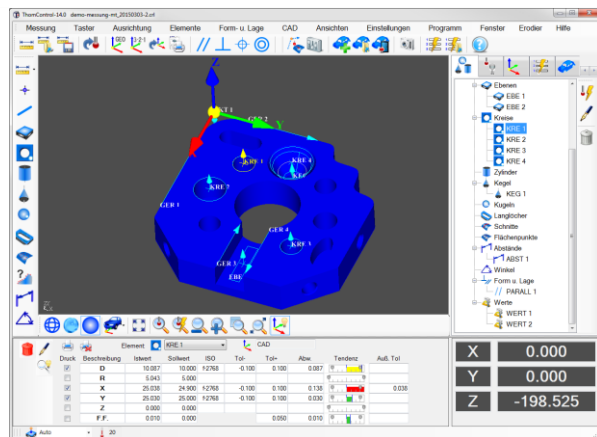
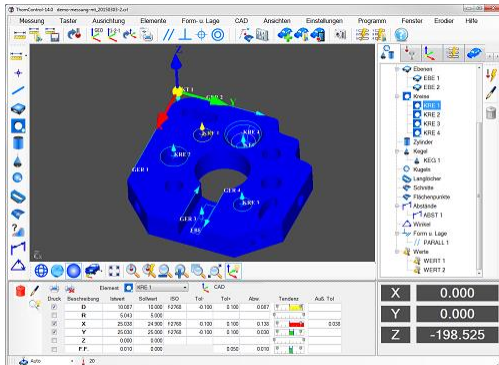


## Coordinate Measuring Machine RAPID-Plus CNC

*Made in Germany*



## Advantage 1: User friendly inspection software



The inspection software ThomControl is very easy to use.

**ThomControl** convinces with its simple operation and maximum operating comfort. An extensive graphic support allows even untrained users after a few days efficient and time saving inspection.

**Teach-In** measurement programs can be learned by using the joystick. If the operator works with a CAD model, the **features can be selected via the CAD file with a mouse click and automatically measured**. ThomControl generates the measurement program in the background. Specific CNC probing strategies are offered according to the individual item. These probing strategies are visually displayed and **can easily be configured as required**.

ThomControl is based on the three main modules: Basic Geometry, CAD

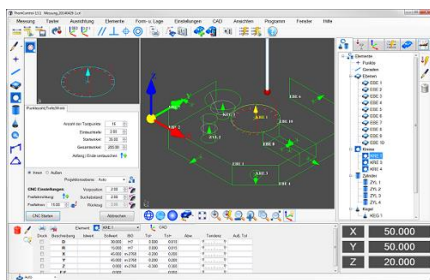
Import, Freeform Surfaces. They can be upgraded at anytime.

## ThomControl Basic Geometry

**Simple, intuitive operation** with graphical support through a **clear user interface**.

**Easy creation of alignments** with the **3-2-1-alignment** or the **Geometric alignment** respectively with **graphic preview**.

The **nominal values** of the elements can be **entered in clear windows** and then **automatically measured via a displayed CNC measuring strategy**. A **tolerance database** with the ISO tolerances according to DIN ISO 286 is available.



The **measurement results** are displayed directly in the result window with **graphical trend bars**.

**Extensive form and position evaluations** such as parallelism, position, concentricity, symmetry, runout, total runout, perpendicularity, flatness, straightness, roundness and cylindricity are available.

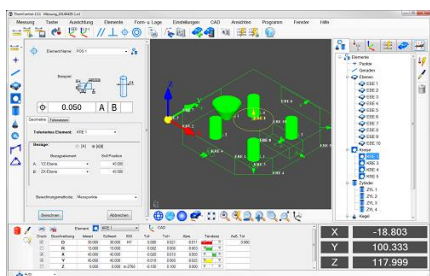
**Measuring programs** can **easily be created and changed by double clicking on the program line**. CNC and manual measurement programs can be generated.

All **measurement results are saved and accessible for future investigation**.

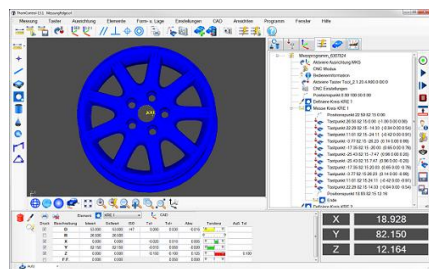
In addition to the internal file format of ThomControl, the **measurement reports** can also be saved in **Word, Excel and PDF format**. **Adaptation to personal layout requirements** can simply be done. Several standard report templates are included.

Various constructions of geometric elements allow extensive calculations of theoretical dimension.

All items are displayed in 3D and can be printed graphically for obvious interpretation of the measurement results.



## ThomControl Basic Geometry with CAD import



**CAD files in IGS and STEP format** can be imported. **Elements can be selected via the CAD file with one click and automatically measured**.

ThomControl proposes a measurement strategy and displays the moving paths on the screen. The strategy may be modified as required.

By simply clicking on the CAD elements, the measuring program is created.

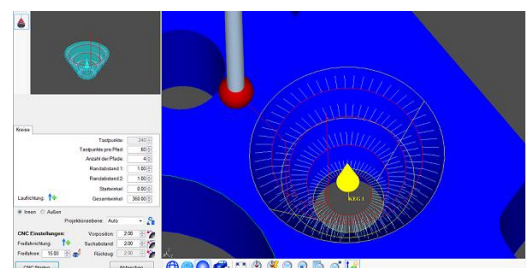
Thereby **Nominals are generated and taken from the CAD data**.

The optimal vector direction of

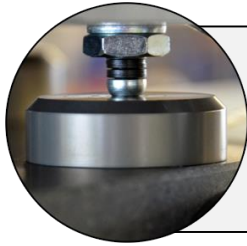
the measuring points is created. Any number of measurement points can therefore be taken even in difficult areas. **Measuring programs** can also be created **offline** and the measurement process can be **simulated**.

**Graphical views** can be **created and recalled at any time**.

Using the **RPS alignment**, the operator can easily and quickly align the workpiece against CAD.

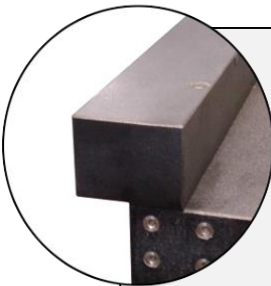


## Advantage 2: Solid machine construction „Made in Germany“



### Precision air bearing guides

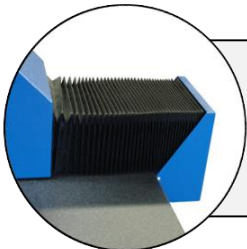
Our air bearing guides ensure highest reproducibility and accuracy of guidance. Due to our air bearing technology, the machines are moving nearly friction-free. Therefore our machines are operating with the highest precision and nearly maintenance free.



### High-precision granite guideways

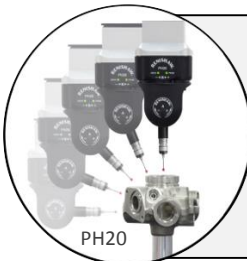
Our measuring machines are equipped with high-precision granite guideways in all axes. Granite guideways are characterized by the following properties:

- **Highest mechanical precision.** The granite guideways are lapped with an accuracy of up to 1 micron / m.
- **Temperature stability.**
- Very good damping properties.
- **Tension-free and long-term stability.**



### Covered guideways

The covered guideways protect the machine against external influences, such as dirt, damage and thermal conditions. Thus, the measuring machine can also be used in production environments.



### Highly flexible touch probes

Our measuring machines can be equipped with all available Renishaw touch probes. You can select everything starting by a simple fix probe head up to a highly flexible five-axis probe head including headtouch functionality and combined with an automatic probe changing rack. Whatever your measurement needs, there's a probe to suit you.



### Double passive vibration damping system

The Double passive vibration damping absorbs vibrations right down to 40 Hz. Vibrations, right down to 10 Hz can be absorbed by use of a membrane active air damping system.





## Advantage 3: Best price performance

The RAPID Plus is a coordinate measuring machine that comes with a large number of variants. Thus, the individual axis lengths can be varied according to your needs. In the following price list you can find some examples for different machine sizes.

### Your delivery:

1. Coordinate Measuring Machine RAPID Plus CNC „*Made in Germany*“  
Measurement uncertainty according ISO 10360-2: MPE<sub>e</sub>=2.2+L/350, MPE<sub>p</sub>=2.5µm (with touch probe TP20), MPE<sub>e</sub>=1.9+L/350, MPE<sub>p</sub>=1.9µm (with touch probe TP200 and SP25)
2. RENISHAW CNC-Controller and one-hand-joystick
3. DELL PC, latest Performance, WINDOWS 7 64 Bit, 22" LED-Monitor, incl. 3 years at place warranty
4. "ALL IN ONE" Colour-Printer HP.
5. Styli-Set 10 pieces, Calibration-ball Ø25.
6. Furthermore you will get the following equipment:

	Package 1	Package 2	Package 3	Package 4	High precision Bestseller! Package 5	Package 6	Scanning! High precision SCANNING Package 7
Stylus-Changer	No	Upgradeable	MCR20	MCR20	SCR200	MCR20	FCR25
Probe-system	TP8	PH6 / TP200	RTP20	PH10T / TP20	PH10T / TP200	PH20	PH10M / SP25
Software ThomControl	Basic- geometry	Basic-geometry	Basic-geometry with CAD	Basic-geometry with CAD	Basic-geometry with CAD	Basic-geometry with CAD	Basic-geometry with CAD
Measuring range 500x700x500	29.990 € P755C-G-TP8- UK	32.490 € P755C-G- PH6200-UK	35.990 € P755C-C-RTP20- UK	42.990 € P755C-C- PH1020-UK	43.990 € P755C-C- PH10200-UK	46.990 € P755C-C-PH20- UK	53.990 € P755C-C- PH10SP-UK
Measuring range 600x800x500	32.990 € P865C-G-TP8- UK	35.490 € P865C-G- PH6200-UK	38.990 € P865C-C-RTP20- UK	45.990 € P865C-C- PH1020-UK	46.990 € P865C-C- PH10200-UK	49.990 € P865C-C-PH20- UK	56.990 € P865C-C- PH10SP-UK
Measuring range 700x1200x600	37.990 € P1276C-G- TP8-UK	40.490 € P1276C-G- PH6200-UK	43.990 € P1276C-C- RTP20-UK	50.990 € P1276C-C- PH1020-UK	51.990 € P1276C-C- PH10200-UK	54.990 € P1276C-C-PH20- UK	61.990 € P1276C-C- PH10SP-UK
Measuring range 800x1200x700	43.990 € P1287C-G- TP8-UK	46.490 € P1287C-G- PH6200-UK	49.990 € P1287C-C- RTP20-UK	56.990 € P1287C-C- PH1020-UK	57.990 € P1287C-C- PH10200-UK	60.990 € P1287C-C-PH20- UK	67.990 € P1287C-C- PH10SP-UK
Measuring range 800x1500x700	49.990 € P1287C-G- TP8-UK	52.490 € P1287C-G- PH6200-UK	55.990 € P1287C-C- RTP20-UK	62.990 € P1287C-C- PH1020-UK	63.990 € P1287C-C- PH10200-UK	66.990 € P1587C-C-PH20- UK	73.990 € P1587C-C- PH10SP-UK

Commissioning and training package 5590 € (for European countries) / 6590 € (for all other countries). This package includes the following services: 2 days training, 1 day commissioning, all travel and Hotel expenses. Packing costs: 950 €.  
This offer is without obligation. Price changes are reserved. All prices are Ex. Work. Warranty period 12 months.



The RAPID-Plus can be delivered in many axis lengths in 100 mm steps.



### Controller and Joystick by RENISHAW

Modern, fast and compact controllers by RENISHAW give our measuring machines especially in case of scanning an excellent performance.



Ergonomic one-hand joystick MCU-Lite-2 by RENISHAW

- Emergency Stop
- Variable speed control
- 14 buttons
- 2 programmable buttons

## Flexible Touch-probes by RENISHAW

### TP8 Probe head with integrated touch probe



The 2D repeatability of this probe system is at  $\pm 1$  micron.  
After each adjustment of the head it must be recalibrated.  
This probe head cannot work with an automatic stylus changing rack.

### PH6 fix probe head



With this head in combination with a star stylus you can also touch from 5 sides.  
Max. extension 150 mm.  
The PH6 can be used together with the TP20 or TP200 touch probe.

### RTP20 automated indexing probe head



With integrated touch probe TP20.  
Can be moved to 168 repeatable positions in 15-degree increments using both the A and B axes, requiring a one-time only qualification for each stylus position thus ensuring fast throughput for part inspection.  
Utilising the CMM motion to lock and orientate the head, together with the MCR20, provides a fully automated system.  
Reproducibility 1.5 microns with a turning radius of 70 mm.  
Maximum extension (EM2) of 95 mm. This results in a max. immersion depth of 168 mm.

### PH10T / PH10M motorised indexing head



This system enables fast, complete and repeatable measuring of more complex workpieces.  
Rotating axis  $\pm 180^\circ$  and swinging axis  $0^\circ$ - $105^\circ$  in  $7.5^\circ$  steps. In total you get a number of 720 positions.  
Repeatability of position  $\pm 0.5 \mu\text{m}$  at about 100 mm swivel radius.  
Max. extension length 300 mm.  
**PH10T:** All M8 thread probes (like TP20 and TP200) can be fitted.  
**PH10M:** All autojoint system probe heads like SP25 can be fitted.

### PH20 5-axis simultaneous motion probe head with Headtouch performance



PH20's unique 'head touches' allow measurement points to be taken by moving only the head rather than the CMM structure. Using only the rapid rotary motion of the head, points can be taken faster, and with improved accuracy and repeatability. Furthermore, 5-axis motion eliminates time spent indexing the head. Together these speed increases typically result in a 3-fold improvement in throughput over conventional systems.  
Each angular position in space can be set with an angular resolution of 0.08 arcseconds (0.04 microns per 100 mm radius).  
Range: A-Axis  $\pm 115^\circ$  B-Axis unlimited.  
Max touch speed: 50 mm/s.  
Integrated TP20 touch probe.  
Maximum extension (EM2) of 95 mm. This results in a max. immersion depth of 168 mm

### TP20 Touch probe



The TP20 touch trigger probe enables manual or automatic stylus changing without re-qualification. Roundabout 3 million touches per module.  
2D-uncertainty  $0.8 \mu\text{m}$  with 10 mm Stylus length.  
Repeatability ( $\text{max}2\sigma$ )  $0.35 \mu\text{m}$  with 10 mm Stylus length.  
Max. stylus length 60 mm.  
Related stylus changer: MCR20

### TP200 Touch probe *Highest precision*



High precision 6 way touch probe with stylus module changing.  
Roundabout 10 million touches per module.  
2D-uncertainty  $0.8 \mu\text{m}$  with 50 mm Stylus length.  
Repeatability ( $\text{max}2\sigma$ )  $0.4 \mu\text{m}$  with 50 mm Stylus length.  
Max. stylus length **100 mm**.  
Related stylus changer: SCR200

### SP25 Scanning probe



*Highest precision*  
Stylus length: Kit 1: 20 – 50 mm, Kit2: 50 – 105 mm, Kit 3: 120 – 200 mm, Kit 4: 220 – 400 mm. *Stylus length up to 400*  
The SP25 has only 25 mm diameter. He can be used for continuous scanning as well as for single-point measurements.  
2D-uncertainty in the x-y-plane  $0.2 \mu\text{m}$ , Repeatability ( $\text{max}2\sigma$ )  $0.3 \mu\text{m}$ , resolution  $< 0.1 \mu\text{m}$ .  
Highest lifespan because of an integrated optical measuring system.

Stylus changing racks by RENISHAW, for automated stylus changing without re-calibration.



## MCR20

For TP20, RTP20, PH20.  
6 changing slots.  
Integrated Collision  
protection.



## SCR200

For TP200.  
6 changing slots.  
Integrated Collision  
protection.

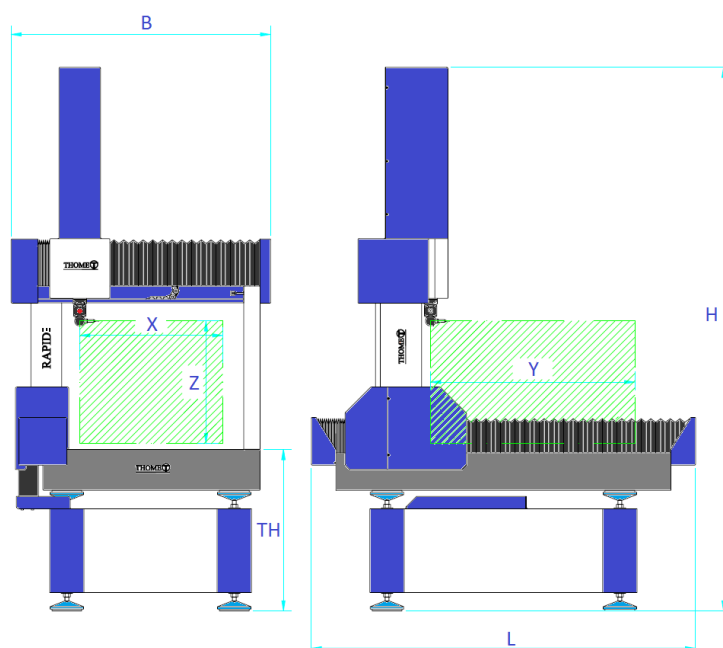


## FCR25

For SP25.  
Modules, each with 3  
changing slots.  
With MRS module holder.

## The technical data of the CNC measuring machine RAPID-Plus:

Measuring range X/Y/Z [mm]	500/700/500	600/800/500	700/1200/600	800/1200/700	800/1500/700
Machine weight [kg]	750	1.100	1.500	2.100	2.700
Permissible workpiece weight [kg]	500	600	700	800	900
Length L [mm]	1.460	1.560	1.960	1.960	2.260
Width B [mm]	1.071	1.171	1.271	1.371	1.371
Height H [mm]	2.450	2.450	2.650	2.850	2.850
Delivery height [mm]	1.900	1.900	2.000	2.100	2.100
Table height TH [mm]	800				
Length measurement uncertainty according ISO 10360-2 [µm]	MPE <sub>E</sub> = 1.9 + (L/350) MPE <sub>E</sub> = 2.2 + (L/350)		with TP200 and SP25 touch probe system with TP20 and TP8 touch probe system		
Volumetric probing error according ISO 10360-2 [µm]	MPE <sub>P</sub> = 2.1 MPE <sub>P</sub> = 2.5		with TP200 and SP25 touch probe system with TP20 and TP8 touch probe system		
Volumetric scanning probing error ISO 10360-4 [µm]	MPE <sub>THP</sub> = 3.5 Scanning time MPT <sub>τ</sub> = 68 [s]				
Resolution [µm]	0.5				
Joystick speed	0 – 150 [mm/s]				
Max. speed	780 [mm/s]				
Max. acceleration	600 [mm/s²]				
Temperature to ensure the length measurement uncertainty	Without Temp.-Compensation: 20°C +/-2°C, max. 1°C per hour and 1.5°C per day. With online Temp.-Compensation: 15°C – 28°C, max. 1°C per hour and 3°C pro Tag. Volumetric Temp. gradient: Max. 1°C per meter.				
Air consumption	25 [l/min]      Air source: min. 120 [l/min]				
Compressed air quality	Cleaned and filtered compressed air with 6 bar. Air quality according ISO 8573 part 1 class 2.				
Electrical connection	4 grounded power sockets 220V with 16A fuse. Power consumption: max. 1000 VA.				



The RAPID-Plus is a highly reliable, precise and sophisticated measuring machine with an optimized price / performance ratio. In addition to the offers mentioned here, we will gladly create your individual offer, with the optimum solution for you.

### Flexibility is our strength!

THOME Precision is a family business. We develop and manufacture the coordinate measuring machines and the metrology software ThomControl in-house.

### The development and production takes place exclusively in Germany.

Our experienced developers will be pleased to create also for you a customized solution.

## THOME Präzision GmbH

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www.thome-praezision.de

Space requirement sketch relating to mounting of the RAPID-Plus CNC measuring machine.