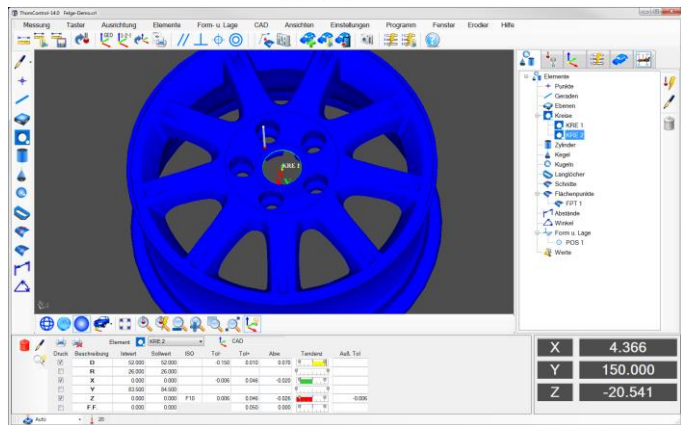


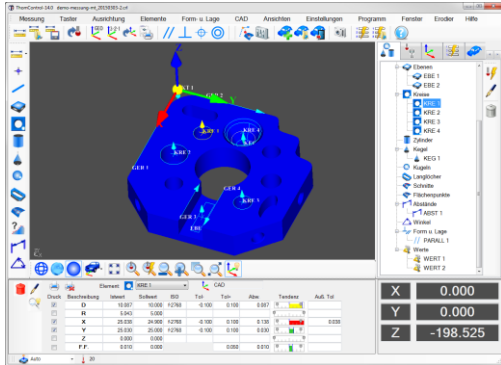
Manual coordinate measuring machine SMART



Made in Germany



Your 1st benefit: User-friendly measuring software



ThomControl convinces with simplest operation and highest operating comfort.

Extensive graphical support allows even inexperienced operators to measure efficiently and quickly after just a few days.

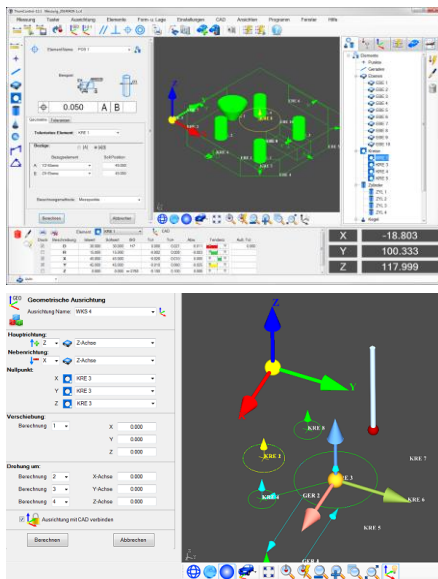
Measuring programs can be taught in using the teach-in procedure. When the measuring programs are played back, the elements to be measured are graphically highlighted. This gives the operator an ideal orientation when measuring manually.

The elements can be clicked directly on a CAD model and target values can be generated. The measuring program is written in the background.

ThomControl consists of 3 main modules - basic geometry, CAD import, freeform surfaces - and can be extended at any time.

ThomControl basic geometry

Simple, intuitive operation with graphic support through a clear user interface. All elements are displayed graphically in 3D and can be printed graphically in the measurement protocol for better interpretation of the measurement results. The target values of the elements can be entered in clear windows and then measured. A tolerance database with ISO tolerances according to DIN ISO 286 is integrated.



The last measurement result is displayed directly in the result window with a graphical trend bar. This allows the operator to see all deviations at a glance. Workpiece alignments can be easily created using the 3-2-1 alignment or the geometric alignment, each with a graphical preview. The alignments can be rotated and shifted as desired.

Extensive form and position evaluations such as parallelism, squareness, position, coaxiality, concentricity, symmetry, concentricity, total concentricity, flatness, straightness, roundness and cylindricity are available.

Manual measuring programs can be created very easily and changed by double-clicking on a program line.

All measurement results are stored and can be viewed again at any time.

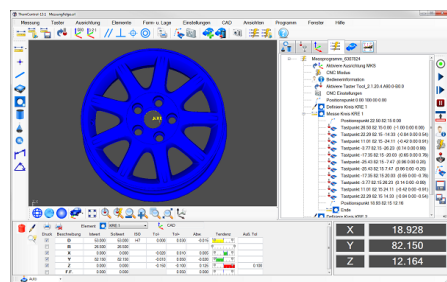
In addition to the internal file format of THOMControl, the measurement reports can also be saved in Word, Excel and PDF format.

The measurement reports can be easily adapted to individual requirements.

Several standard protocol templates are included.

Various construction possibilities of geometric elements such as section, middle element, projection, best-fit etc. allow extensive calculations of theoretical dimensions.

ThomControl basic geometry with CAD



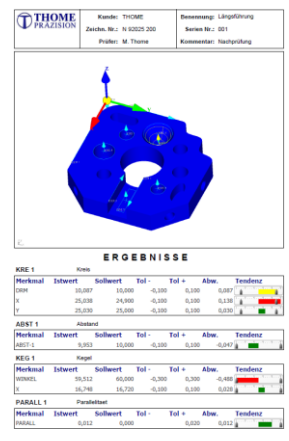
CAD-files in IGS and STEP format can also be imported. This allows geometric elements to be selected via the CAD file with a mouse click and their nominal values generated.

Clear protocol printouts with graphic support can be printed or saved in PDF, WORD and EXCEL formats. The protocol printouts can also be generated automatically by the measuring program.

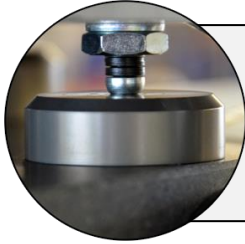
The RPS alignment allows the operator to quickly and

easily align against CAD.

Graphical views can be generated and recalled at any time, also controlled by the measuring program. This makes it easier to see the elements optimally when running the measuring programs.

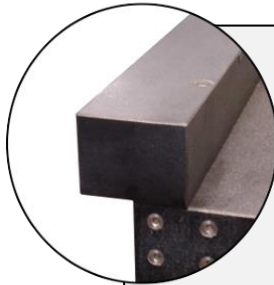


Your 2nd benefit: Solid machine engineering „Made in Germany“



Precision air bearing guides

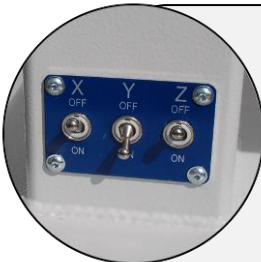
Our air bearing guides guarantee highest reproducibility and guiding accuracy. The guides are supported without friction by air bearings. The measuring machines therefore work almost wear-free.



Granite Guides

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

- Highest mechanical precision. The granite guides are finely lapped with an accuracy of up to 1µm/m.
- Thermally stable.
- Very good damping properties.
- Strain-free and long-term stable.



Single clamping in all axes

The individual clamping in all axes enables the operator to clamp an axis quickly. This allows the machine to move exactly parallel to the axis. In this way, a contour can be traced or touched within a defined level. If required, the workpieces can also be aligned very precisely.



Two-stage fine drive

The two-stage fine drive allows easy access areas to be measured quickly and precisely.

Careful and slow measurements can be made in hard-to-reach areas.

The fine step allows precise positioning in the µm range.



MH20i

Flexible touch probes

The MH20i is an indexable manual swivel head. It can be rotated and swivelled in 15° steps without having to be recalibrated. A magnetic quick-change point allows the operator to change the stylus in seconds.

The TP8 is an inexpensive and robust probe head for simple tasks.



TP8



Double passive vibration damping

The double passive vibration damping absorbs vibrations down to 40 Hz. Vibrations down to 10 Hz can be absorbed by using active air membrane damping.



Active
Air-damping

Your 3rd benefit: Best Price/performance ratio

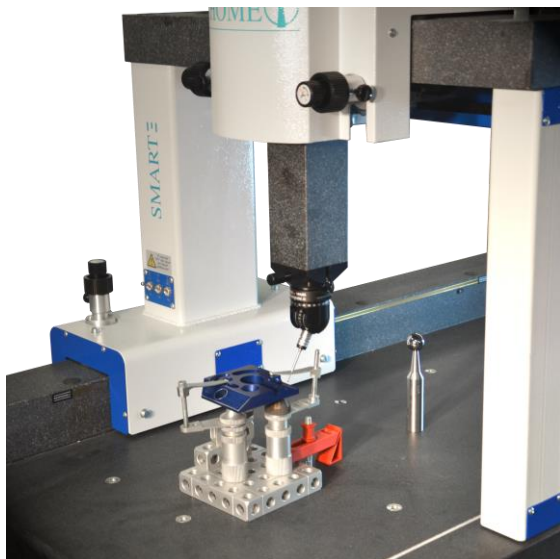
The manual measuring machine SMART is available in different versions. Thus, the individual axis lengths can be adjusted according to your space requirements. The following table lists the most common machine sizes by price.

Your scope of supply:

1. Manual 3D- measuring machine SMART „*Made in Germany*“
Uncertainty of measurement according to ISO 10360-2: MPE_e=3+L/250, MPE_p=3,5µm (with measuring probes TP20 and TP8),
2. Modern USB-electronics
3. DELL PC, latest Performance, WINDOWS 10 64 Bit, 24" LED-Monitor, incl. 3 Jahre local warranty.
4. "ALL IN ONE" colour printer by HP.
5. Stylus Ø3 length 30mm and calibration sphere Ø25mm.
6. Further you receive the following equipment according to desire:

	Package 1	Package 2	Package 3	Package 4	Most sold! Package 5	Package 6
Probe	TP8	TP8	PH6 / TP20 2 Taster-Module	PH6 / TP20 2 Taster-Module	MH20i	MH20i
Measuring Software ThomControl	Basic geometry	Basic geometry with CAD	Basic geometry	Basic geometry with CAD	Basic geometry	Basic geometry with CAD
Measuring range 600x400x280	14.990 € P643-G-TP8	16.490 € P643-C-TP8	16.990 € P643-G-PH6TP20	18.490 € P643-C-PH6TP20	17.390 € P643-G-MH20i	18.890 € P643-C-MH20i
Measuring range 800x400x280	16.490 € P843-G-TP8	17.990 € P843-C-TP8	18.490 € P843-G-PH6TP20	19.990 € P843-C-PH6TP20	18.890 € P843-G-MH20i	20.390 € P843-C-MH20i
Measuring range 600x500x280	17.490 € P653-G-TP8	18.990 € P653-C-TP8	19.490 € P653-G-PH6TP20	20.990 € P653-C-PH6TP20	19.890 € P653-G-MH20i	21.390 € P653-C-MH20i
Measuring range 800x500x280	19.490 € P853-G-TP8	20.990 € P853-C-TP8	21.490 € P853-G-PH6TP20	22.990 € P853-C-PH6TP20	21.890 € P853-G-MH20i	23.390 € P853-C-MH20i
Measuring range 800x600x280	21.490 € P863-G-TP8	22.990 € P863-C-TP8	23.490 € P863-G-PH6TP20	24.990 € P863-C-PH6TP20	23.890 € P863-G-MH20i	25.390 € P863-C-MH20i

2 days training and approx. 1-day commissioning 2.790 € (within Germany, Austria, Switzerland, Luxembourg) plus Travel expenses according to expense. Packaging costs: 400 €. Shipping costs according to expenditure. This offer is subject to change. Prices are subject to change without notice. Delivery conditions ex works. For deliveries within Germany plus. 19% VAT. The warranty period is 12 months.



The SMART measuring machine can be supplied with different axis lengths and with different probe systems.

Clamping system for Measuring machines

In order to be able to measure effectively, the problem of workpiece fixing must be solved quickly and easily.

For this purpose, we offer you a comfortable and inexpensive clamping system.

Various dimensions of clamping plates are available.

In addition, a universal modular system consisting of over 100 individual parts can be purchased.

This enables them to react very quickly and flexibly to the requirements of different workpieces.



The modular system of our clamping system contains more than 100 individual parts.
1.198 € plus. shipping and VAT.



Clamping plates with T-slots ensure a very fast and flexible assembly.
Clamping plate with 300x300 for 198 € plus shipping and VAT.

Temperature compensation

The SMART measuring machine can also be equipped with automatic temperature compensation. This increases the permissible temperature range by allowing the machine to operate with high precision.

Flexible Touch Probes by RENISHAW



TP8 inexpensive entry-level probe head

With integrated measuring probes.

The TP8 is mostly used in combination with star pushbuttons.

- Max. Repeat accuracy in one scanning direction 0,5 μm
- The 2D repeat accuracy of this touch probe is as follows $\pm 1 \mu\text{m}$.
- With star probes you can dive sideways.
- Maximum probe length 50 mm.
- The connecting thread for styli is M3.

The probe must be recalibrated after each adjustment of the probe head.

The probing force is adjustable. It is delivered with 0,12 N.



MH20i indexable Rotary swivel head

With integrated interchangeable measuring probe TP20.

The probe head can be tilted manually in 2 axes in 15° steps in a reproducible manner (max. 168 positions).

A recalibration is not necessarily due to the indexability of the probe.

Reproducibility 1.5 μm with a swivel radius of 70 mm.

Maximum extension (EM2) of 95 mm. This results in a maximum immersion depth of 168 mm.

Max. Stylus length 60 mm. Maximum extension 150 mm.

2D probing uncertainty 0.8 μm and repeat accuracy (max2 σ) 0.35 μm with 10 mm stylus length.

The service life per stylus module is approx. 3 million probes.



PH6 Rigid probe head and TP20 probe

The PH6 probe head in combination with the TP20 probe is usually used with a star probe.

The TP20 is an exchangeable, high-precision, 5-way-probe.

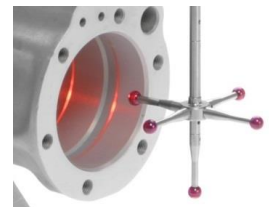
Star probes can be used for lateral immersion.

Max. Stylus length 60 mm. Maximum extension 150 mm.

2D probing uncertainty 0.8 μm and

Repeat accuracy (max2 σ) 0.35 μm at 10 mm stylus length

The service life per probe module is approx. 3 million probes.



MSR1- Storage place

The TP20- Probe modules are the heart of precision. The modules are very expensive and should therefore be handled very carefully.

The MSR1 storage space protects the probe modules:

- Protection against dirt
- Protection against damages

It is therefore best to always place the modules in the MSR1 storage location in a protected place.

MSR1 with wall bracket 489 €.

MSR1 with stand for mounting on the measuring plate 559 €.



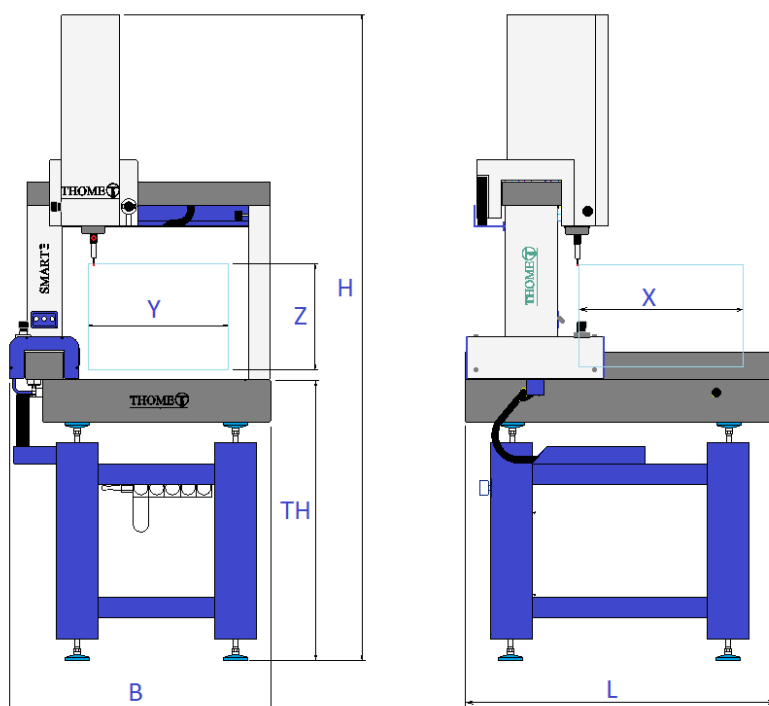
Styli M2 and M3 and styli accessories

You will receive the accessories for your measuring machine in original manufacturer quality. We only use original Renishaw styli and parts. Request our catalogue or download the catalogue from the Internet. We will be happy to advise you on your specific application.

In addition to the touch probes presented here, all other manual touch probes from RENISHAW can also be used. If you have special requirements, our experienced engineers would be happy to work with you to find the optimal solution. Feel free to contact us.

The technical data for manual measuring machine SMART:

Measuring range X/Y/Z [mm]	600/400/280	800/400/280	600/500/280	800/500/280	800/600/280
Machine weight [kg]	410	500	500	600	730
Max. workpiece weight	200	250	200	250	300
Length L [mm]	1.015	1.215	1.015	1.215	1.215
Width B [mm]	760	760	860	860	960
Height H [mm]	1.845				
Table height TH [mm]	850				
Length measuring deviation according to ISO 10360-2 [μm]	MPE _E = 3,0 + (L/250) with TP20 and TP8 probe				
probing deviation according to ISO 10360-2 [μm]	MPE _P = 3,5 with TP20 and TP8 probe				
resolution [μm]	0,5				
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 per day. Spatial temp. gradient: Max. 1°C per meter.				
Air consumption	25 [l/min] Air source: min. 120 [l/min]				
Air quality	Cleaned and filtered compressed air at 6 bar. Air quality according to ISO 8573 Part 1 Class 2.				
Electrical connection	4 earthed Schuko sockets 220V with 16A fuse. Power consumption: max. 700 VA.				



Space requirement sketch for setting up the manual measuring machine SMART.

The manual measuring machine SMART is a very robust, reliable and precise measuring machine with an optimized price/performance ratio. In addition to the price examples given here, we would also be pleased to make you an individual offer with the optimum solution for you.

Flexibility is our strength!

THOME Präzision is a family business and develops and manufactures the coordinate measuring machines and the measuring software ThomControl in-house.

The development and production take place exclusively in Germany. Our experienced developers are happy to create a tailor-made solution for you.

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Further products from THOME Präzision GmbH

- CNC measuring machines in portal design
- Manual and CNC controlled column measuring machines
- Modernization (retrofit) of old measuring machines of any manufacturer
- Touch probes and styli for measuring machines
- Clamping systems for measuring machines
- Precision parts made of granite in special production
- Measuring plates, measuring bars, measuring angles made of granite
- Special mechanical engineering in the field of production metrology