

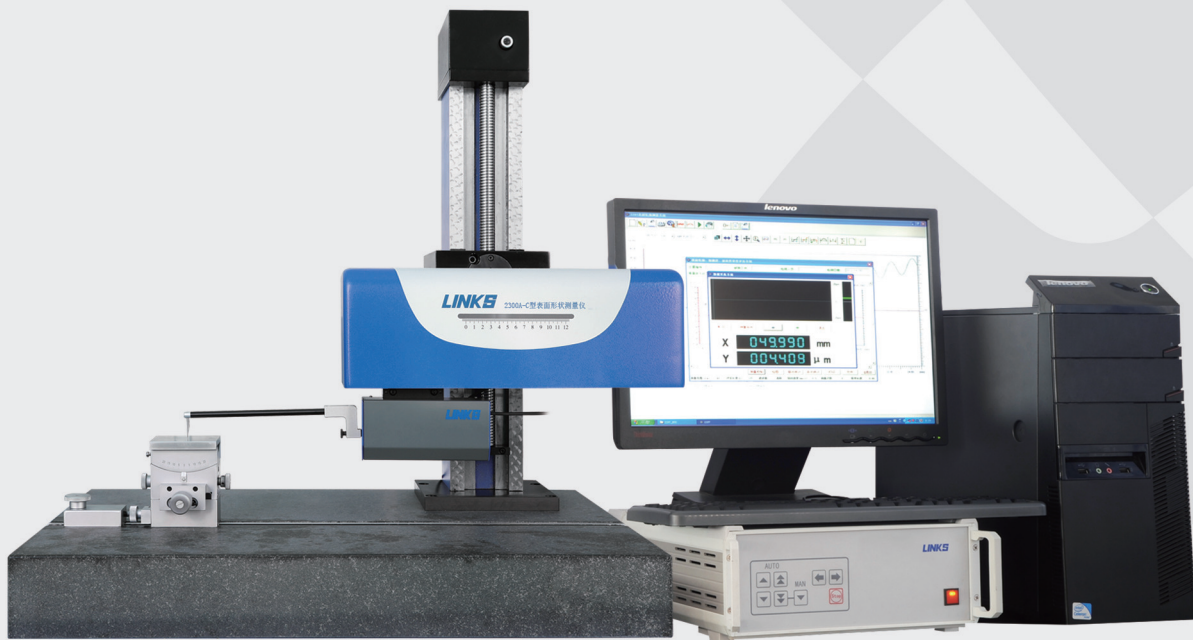


通用技术哈量公司
GENERTEC HMCT

表面轮廓测量仪

SURFACE PROFILE MEASURING INSTRUMENTS

GENERTEC HMCT is one of the largest precision measuring and cutting tool manufacturers in China, it is also an ISO 9001 quality system certified enterprise.



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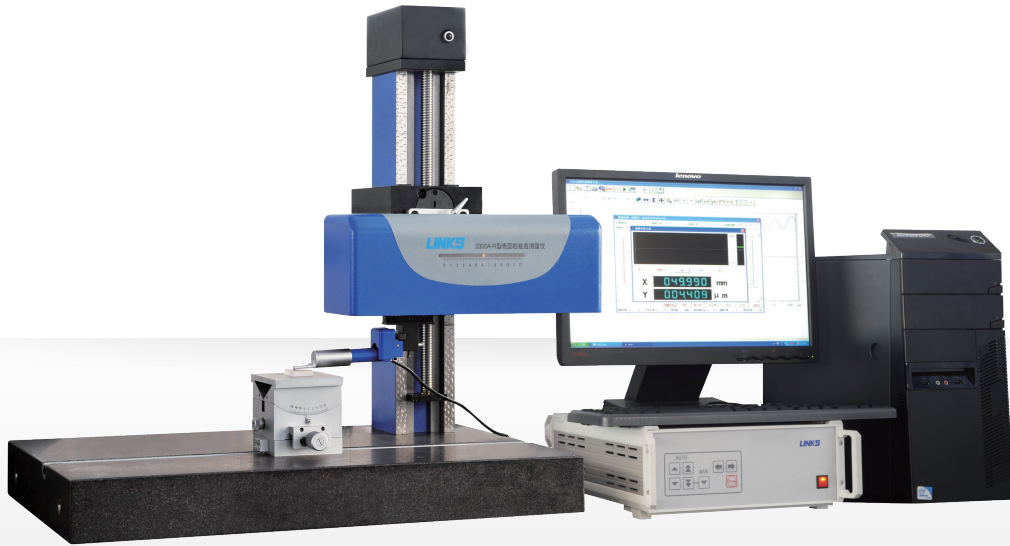
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轮廓粗糙度测量仪 2300A-RC 型

Surface Profile Tester Model 2300A-RC



A 用途 / APPLICATIONS >>>

2300A-RC 型轮廓粗糙度测量仪是一台综合性触针式轮廓测量仪器，既可用于检测工件的距离、角度、圆弧半径、直线度、圆轮廓度等二维形位误差参数，又可用于检测表面粗糙度、波纹度、原始轮廓等微观轮廓参数，适用于生产企业和计量单位的计量检测部门。

The model 2300A-RC Surface profile tester is a comprehensive stylus profile measuring instrument . It can be used to detect two-dimensional shape error parameters such as distance , angle , arc radius , straightness and circular contour of workpiece . It can also be used to monitor micro-profile parameters such as surface roughness , waviness and primary profile parameters . It is suitable device for manufacturer to analyze the components' form error in workshop , or for metrological departments .

B 特点 / FEATURES >>>

- 本仪器配备了光栅原理的触针式形状传感器，可配备标准斧型、圆锥型、球型等各种形式测针，以适合各种测量要求。测针和测杆通过精确的定位结构保证了互换精度，使更换测针和测杆的操作不影响仪器的测量精度。
- 本仪器还配备了电感式粗糙度传感器，用户可根据测量任务要求，选择标准粗糙度传感器（有导头）、刚

- The instrument is equipped with a stylus shape pick-up with a grating principle . It can be equipped with various types of probe such as single bevel , cone and ball to suit various measurement requirements . The stylus and the side rod ensure the interchange accuracy through the precise positioning structure , so that the operation of replacing the stylus and the measuring rod does not affect the measurement accuracy of the instrument .



性粗糙度传感器、大量程刚性粗糙度传感器、深槽粗糙度传感器、圆弧粗糙度传感器、小孔粗糙度传感器等。

- 仪器配备了功能强大的轮廓测量评定软件，可以完成被测轮廓的距离、角度、圆弧半径、直线度、圆弧轮廓等形状和位置参数的测量，也可以通过绘制辅助点、辅助直线、辅助圆等图形要素配合直线拟合、自动选择极值点、自动调平、不等比例放大、求取轮廓交点及比例分割点等丰富的功能完成对被测轮廓的各种二维轮廓参数的测量。测量轮廓及标注结果既可以保存为 CAD 兼容的 DXF 文件，又可以打印输出。软件配置的螺纹测量模块可以在输入被测螺纹标称尺寸参数的条件下，将被测螺纹轮廓的所有牙型角、牙型半角、螺距等参数一次评定并标注在图样上，并可以用 CAD 文件、参数文本文件及打印方式输出。特定滚珠丝杠功能及软件模块，可以一键评定滚珠丝杠法向截面的接触角、半径、圆度、圆心距等参数，亦可评定导程参数。
- 仪器还配备了微观轮廓测量软件，可以测量评定表面粗糙度、波纹度、原始轮廓等参数，还可以测量微观轮廓的高度和宽度等参数。

- The instrument is also equipped with an inductive roughness pick-up . The user can select the standard roughness pick-up , rigid roughness pick-up , large-scale rigid roughness pick-up , deep recess roughness pick-up , curved surface pick-up , small-bore roughness pick-up , etc according to the measurement requirements .
- The instrument is equipped with powerful contour measurement and evaluation software , which can measure the shape and position parameters of the measured contour form , such as distance , angle , arc radius , straightness and circular arc profile. It can also draw auxiliary points , auxiliary lines and auxiliary . Graphic elements such as circles are combined with straight line fitting , circle fitting , automatic selection of pole values , automatic leveling , unequal scaling , contour intersection and proportional division points to complete various 2D contour parameters of the measured contour . Measurement profiles and labeling results can be saved as CAD-compatible DXF files or printed out . The software-configured thread measurement module can evaluate all the tooth angles , tooth half angles , pitch and other parameters of the measured thread profile once and enter the pattern under the condition of inputting the nominal thread size parameters of the tested thread , and can use CAD files , parameter text files , and printouts . The specific ball screw function and software module can evaluate the contact angle , radius , roundness , center distance and other parameters of the normal section of the ball screw with one button , and can also evaluate the guiding parameters .
- The instrument is also equipped with micro-contour measurement software for measuring parameters such as surface roughness , waviness , and original contour , as well as the height and width of the micro-profile parameters .

C 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
粗糙度传感器 (标准、刚性)	各 1 支 / 1 pc	Surface roughness Pick-up(standard,skidless)
电箱	1 套 / 1 set	Electronic unit
微机、打印机	各 1 套 / 1 set	Microcomputer/printer
V 型工作台	1 套 / 1 set	Vee-block
微调工作台	1 套 / 1 set	Precise positioning unit
调斜工作台	1 套 / 1 set	Tiltable measuring table
平口钳	1 件 / 1 pc	Parallel vice
校对样块	2 块 / 2 pc	Roughness standard



基本配置	数量 / Unit	Basic configuration
形状传感器	1 支 / 1 pc	Formed pick up
高度校准器具	1 套 / 1 set	Height calibration gauge set
标准球校准器具	1 套 / 1 set	Standard ball contour
测针校准附件	1 套 / 1 set	Stylus calibration gauge set

可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
深槽粗糙度传感器	1 支 / 1 pc	Recess pick-up
圆弧粗糙度传感器	1 支 / 1 pc	Curved surface pick-up
刚性大量程传感器 (1200 μ m)	1 支 / 1 pc	Wide range skidless pick-up (1200 μ m)
刚性深槽传感器	1 支 / 1 pc	Skidless pick-up for deep recess
刚性接合面传感器	1 支 / 1 pc	Skidless pick-up for joint surface
刚性小孔传感器	1 支 / 1 pc	Small-bore skidless pick-up for
万向工作台	1 套 / 1 set	Universal measuring table
多功能 V 型块	1 件 / 1 pc	Multifunction Vee block
轮廓仪专用底台	1 套 / 1 set	Desk for surface profile tester
角度校准器具	1 套 / 1 set	Angle calibration gauge set
可根据用户要求设计专用形状测针 和粗糙度传感器		Customer tailored styli and surface roughness pick-ups

D 技术规格 / SPECIFICATIONS >>>

形状测量系统	2300A-RC
测量原理	垂直方向：触针法，光栅传感器；水平方向：直线光栅
测量范围	垂直：40mm；水平：120mm (200mm)
测量精度	垂直： $\pm (2 + H / 5000) \mu\text{m}$ ；水平：4 $\mu\text{m}/100\text{mm}$
垂直分辨力	0.05 μm
水平分辨力	1 μm
测量参数	垂直距离、水平距离、两直线夹角、圆弧半径、圆心 - 直线距离、 圆心 - 圆心距离、直线度、圆轮廓度等形位公差参数
图形放大倍率	无极连续放大；可至最小 800 倍，最大 80000 倍
传感器测杆长	220mm
测针长度	33mm
针尖角度	11°
针尖半径	20 μm
测力	0.02-0.06N
传感器滑行角	上升角 $\leq 77^\circ$ ，下降角 $\leq 88^\circ$



微观轮廓测量系统	2300A-RC
测量范围	垂直: 40μm/400μm (1200μm) ; 水平: 120mm (200mm)
表面粗糙度 Ra 示值误差	≤ ±5%
最小分辨力	垂直: 0.6nm; 水平: 1μm
取样长度	0.08mm, 0.25mm, 0.8mm, 2.5mm, 8mm
评定长度	N 倍取样长度, N = 1, 2, 3, 4, 5
粗糙度测量参数	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rdq, Rmr, Rmax, RzJIS
波纹度测量参数	Wa, Wc, Wp, Wv, Wz, Wq, Wsm, Wt, Wsk, Wku, Wdq, Wmr, Wmax, WzJIS
原始轮廓测量参数	Pa, Pc, Pp, Pv, Pz, Pq, Psm, Pt, Psk, Pku, Pdq, Pmr, Pmax, PzJIS
微观轮廓测量参数	X2-X1 , Z2-Z1
轮廓图形的垂直放大倍率	1-500000 可选, 亦可手动输入
轮廓图形的水平放大倍率	1-50000 可选, 亦可手动输入
传感器测针	金刚石圆锥, 锥角 90°, 针尖半径 2μm
图像分析功能	支承率曲线、幅度分布曲线、轮廓峰密度等

技术规格	2300A-RC
驱动箱水平滑行范围	120mm (200mm)
驱动箱滑行速度	0.2, 0.5, 0.8, 1.0mm/s
传感器返回形式	手动, 自动
基准导轨的直线性	1μm/100mm
驱动箱升降	滚动丝杠升降系统, 机动升降, 自动对准零位
立柱垂直测量高度	270mm/300mm
工作底台尺寸 (长 × 宽)	720mm × 460mm 大理石平台
仪器净重	260kg
仪器毛重	360kg
仪器外形尺寸 (长 × 宽 × 高)	1610mm × 460mm × 740mm
包装外形尺寸 (长 × 宽 × 高)	1590mm × 1150mm × 1065mm

Form measuring system	2300A-RC
Measuring principle	stylus contact method, linear scale(vertical); linear scale(horizontal)
Measuring range	40mm(vertical), 120mm(200mm)(horizontal)
Measuring accuracy	± (2+ H /5000) μm(vertical), 4μm/100mm(horizontal)
Resolution (vertical)	0.05μm
Resolution (horizontal)	1μm
Measuring parameters	vertical/horizontal distance, includes angle, arc radius, chamfer width, distance between circle and line, distance between circle center, straightness, roundness, etc.
Profile magnification	Infinite continuous magnification from 800x to 80000x
Pick-up arm length	220mm
Stylus length	33mm
Stylus angle	11°



Form measuring system	2300A-RC
Stylus radius	20 μ m
Setting range of measuring force	0.02-0.06N
Detection angle of stylus	77° (up) / 88° (down)

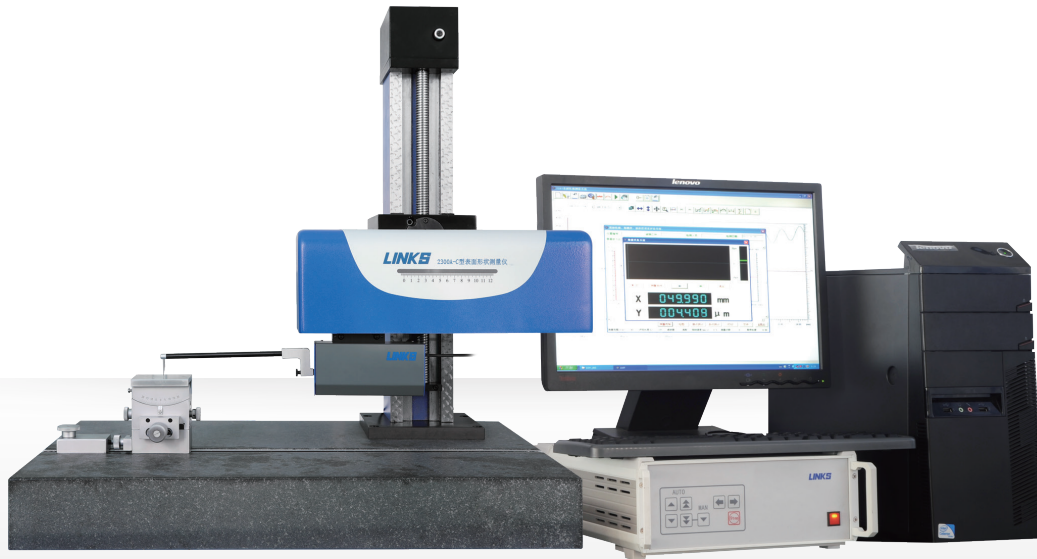
Surface texture measuring system	2300A-RC
Measuring range	40 μ m/400 μ m (1200 μ m) (vertical); 120mm(horizontal)
Ra Indication error of surface roughness measurement	$\leq \pm 5\%$
The smallest resolution	0.6nm(vertical); 1 μ m(horizontal)
Cut-off length	0.08mm, 0.25mm, 0.8mm, 2.5mm, 8mm
Assessment length	N \times cut-off, N = 1, 2, 3, 4, 5
Surface roughness parameters	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rdq, Rmr, Rmax, RzJIS
Waviness parameters	Wa, Wc, Wp, Wv, Wz, Wq, Wsm, Wt, Wsk, Wku, Wdq, Wmr, Wmax, WzJIS
Primary profile parameters	Pa, Pc, Pp, Pv, Pz, Pq, Psm, Pt, Psk, Pku, Pdq, Pmr, Pmax, PzJIS
Micro profile parameters	X2-X1 , Z2-Z1
Vertical profile magnification	Optional in range from 1-500000 or manual entry
Horizontal profile magnification	Optional in range from 1-50000 or manual entry
Pick-up stylus	diamond-90°, angle with spherical tip 2 μ m radius
Graphic analysis	Abbott profile , amplitude distribution curve , profile peak density curve

Specification	2300A-RC
Traversing length	120mm (200mm)
Traversing speed	0.2, 0.5, 0.8, 1.0mm/s
Pick-up return mode	manual, auto
Linearity of guideway	1 μ m/100mm
Vertical motorized adjustment of traverse unit	ballscrew system, auto
Vertical height adjustment	270mm/300mm
Measuring stand (L \times W)	720mm \times 460mm granite base
Net weight of machine	260kg
Gross weight of machine	360kg
Overall dimensions of the tester (L \times W \times H)	1610mm \times 460mm \times 740mm
Overall dimensions of packing box (L \times W \times H)	1590mm \times 1150mm \times 1065mm



表面轮廓测量仪 2300A-C 型

Surface Contour Tester Model 2300A-C



A 用途 / APPLICATIONS >>>

2300A-C 型表面轮廓测量仪测量工件的距离、角度、圆弧半径、以及点、线、圆弧等几何要素的相互位置等形位参数，为生产车间和计量部门提供了对零件形状误差进行高精度检测的手段。

In combination with the precision linear scale system , mode 2300A-C surface contour tester can check the form deviation of mechanical parts in stylus contact method . The various measurements of angle , linearity and radii position are also offered . It is suitable device for manufacturer to analyze the component's form error in workshop , or for metrological departments .

B 特点 / FEATURES >>>

- 本仪器配备了触针式光栅传感器，可配备标准斧型、圆锥型、球型等各种形式测针，以适合各种测量要求。测针和测杆通过精确的定位结构保证了互换精度，使更换测针和测杆的操作不影响仪器的测量精度。
- 本仪器配备了功能强大的轮廓测量评定软件，可以完成被测轮廓的距离、角度、圆弧半径、直线度、圆轮廓度等形状和位置参数的测量，也可以通过绘制辅助点、

- The instrument is equipped with a stylus shape pick-up with a grating principle . It can be equipped with various types of styluses such as standard axe , conical and spherical to suit various measurement requirements . The stylus and the side rod ensure the interchange accuracy through the precise positioning structure , so that the operation of replacing the stylus and the measuring rod does not affect the measurement accuracy of the instrument .



辅助直线、辅助圆等图形要素配合直线拟合、圆拟合、自动选择极值点、自动调平、不等比例放大、求取轮廓交点及比例分割点等丰富的功能完成对被测轮廓的各种二维轮廓参数的测量。测量轮廓及标注结果既可以保存为 CAD 兼容的 DXF 文件，又可以打印输出。软件配置的螺纹测量模块可以在输入被测螺纹标称尺寸参数的条件下，将被测螺纹轮廓的所有牙型角、牙型半角、螺距等参数一次评定并标注在图样上，并且可以用 CAD 文件、参数文本文件及打印方式输出。特定滚珠丝杠功能及软件模块，可以一键评定滚珠丝杠法向截面的接触角、半径、圆度、圆心距等参数，亦可评定导程参数。

- The instrument is equipped with powerful contour measurement and evaluation software, which can measure the shape and position parameters of the measured contour form, such as distance, angle, arc radius, straightness and circular arc profile. It can also draw auxiliary points, auxiliary lines and auxiliary. Graphic elements such as circles are combined with straight line fitting, circle fitting, automatic selection of pole values, automatic leveling, unequal scaling, contour intersection and proportional division points to complete various 2D contour parameters of the measured contour. Measurement profiles and labeling results can be saved as CAD-compatible DXF files or printed out. The software-configured thread measurement module can evaluate all the tooth angles, tooth half angles, pitch and other parameters of the measured thread profile once and enter the pattern under the condition of inputting the nominal thread size parameters of the tested thread, and can use CAD files, parameter text files, and printouts. The specific ball screw function and software module can evaluate the contact angle, radius, roundness, center distance and other parameters of the normal section of the ball screw with one button, and can also evaluate the guiding parameters.

C 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
传感器	1 支 / 1 pc	Pick-up
电箱	1 套 / 1 set	Electronic unit
微机、打印机	各 1 套 / 1 set	Microcomputer, printer
调斜工作台	1 套 / 1 set	Tilttable measuring table
平口钳	1 件 / 1 pc	Parallel vice
高度校准器具	1 套 / 1 set	Height calibration gauge set
标准球校准器具	1 套 / 1 set	Standard ball
测针校准附件	1 套 / 1 set	Contour stylus calibration gauge set

可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
万向工作台	1 套 / 1 set	Universal measuring table
微调工作台	1 套 / 1 set	Precise positioning unit
轮廓仪专用底台	1 套 / 1 set	Desk for surface profile tester
角度校准器具	1 套 / 1 set	Angle calibration gauge set
多功能 V 型块	1 件 / 1 pc	Multifunction Vee block
可根据用户要求设计专用测针		Customer tailored styli



D 技术规格 / SPECIFICATIONS >>>

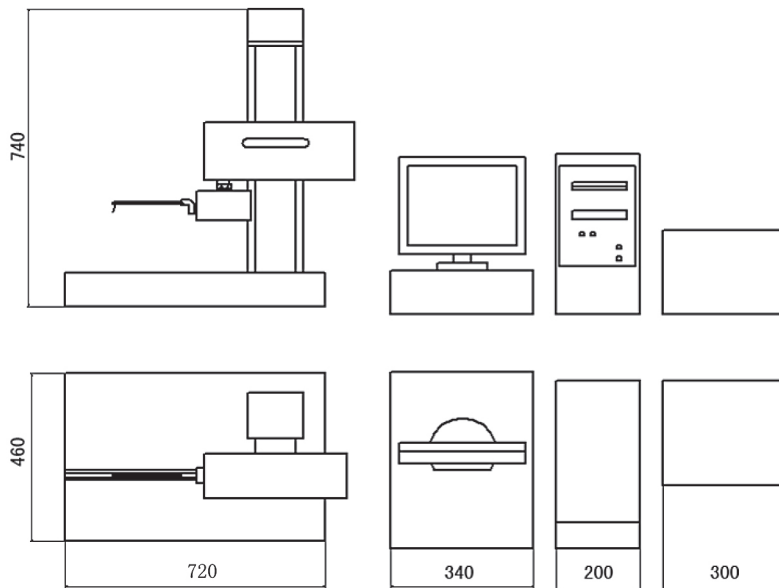
技术规格	2300A-C
测量原理	垂直方向：触针法，光栅传感器；水平方向：直线光栅系统
测量范围	垂直：40mm；水平：120mm（200mm）
测量精度	垂直： $\pm(2+ H 5000)\mu\text{m}$ ；水平： $\pm 4\mu\text{m}/100\text{mm}$
垂直分辨率	0.05 μm
水平分辨率	1 μm
测量参数	垂直距离、水平距离、两直线夹角、圆弧半径、圆心-直线距离、圆心-圆心距离、直线度、圆度等形位公差参数
图形放大倍率	无极连续放大；可至最小 800 倍，最大 80000 倍
驱动速度	0.2, 0.5, 0.8, 1.0mm/s
返回速度	1.5mm/s
基准导轨的直线性	1 $\mu\text{m}/100\text{mm}$
立柱结构	快慢速机动升降系统，自动对准零位
立柱垂直测量高度	270mm
工作底台（长 × 宽）	720mm × 460mm 大理石平台
传感器测杆长	220mm
测针长度	33mm
针尖角度	11°
针尖半径	20 μm
测力	0.02-0.06N
传感器滑行角	上升角 $\leq 77^\circ$ ，下降角 $\leq 88^\circ$
仪器净重	260kg
仪器毛重	360kg
仪器外形尺寸（长 × 宽 × 高）	1610mm × 460mm × 740mm
包装外形尺寸	1065mm × 1150mm × 1590mm

Form measuring system	2300A-C
Measuring principle	stylus contact method ,linear scale(vertical) ; linear scale(horizontal)
Measuring range	40mm(vertical),120mm(200mm)(horizontal)
Measuring accuracy	$\pm (2+ H /5000) \mu\text{m}$ (vertical),4 $\mu\text{m}/100\text{mm}$ (horizontal)
Resolution (vertical)	0.05 μm
Resolution (horizontal)	1 μm
Measuring parameters	vertical/horizontal distance , includes angle , arc radius , chamfer width , distance between circle and line , distance between circle center , straightness , roundness , etc .
Profile magnification	Infinite continuous magnification from 800x to 80000x
Traversing speed	0.2, 0.5, 0.8, 1.0mm/s
Reverse speed	1.5mm/s
Linearity of guideway	1 $\mu\text{m}/100\text{mm}$
Vertical adjustment of traverse unit	ballscrew system for motor drive , two selectable speeds,auto electrical positioning of pick-up



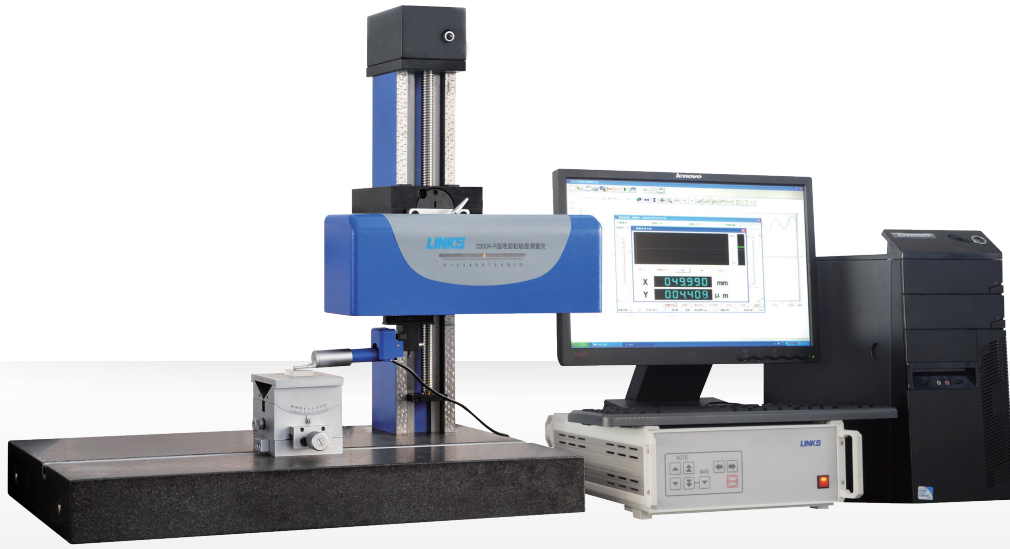
Form measuring system	2300A-C
Vertical height adjustment	270mm
Measuring stand (L×W)	granite base:720mm×460mm
Pick-up extension length	220mm
Stylus length	33mm
Stylus angle	11°
Tip radius	20μm
Stylus force	0.02-0.06N
Detection angle of stylus	77° (up) / 88° (down)
Net weight of machine	260kg
Gross weight of machine	360kg
Overall dimensions of the tester (L×W×H)	1610mm×460mm×740mm
Overall dimensions of packing box	1065mm×1150mm×1590mm

E 安装图 / INSTALLATION LAYOUT >>>



表面粗糙度测量仪 2300A-R 型

Surface Roughness Tester Model 2300A-R



A 用途 / APPLICATIONS >>>

2300A-R 型表面粗糙度测量仪可测量平面、圆柱、深槽和曲面的表面粗糙度、波纹度、原始轮廓和直线度参数，还可测量工件表面微观轮廓的水平和垂直距离。

The model 2300A-R surface roughness tester is capable of checking the surface texture, macro profile, and straightness parameters on the plane, cylinder, deep recess and curved surface. Apart from these, measurement of the micro profile height / width is also available.

B 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
传感器 (标准、刚性)	各 1 支 / 1 pc	Pick-up(standard, skidless)
电箱	1 套 / 1 set	Electronic unit
微机、打印机	各 1 套 / 1 set	Microcomputer/printer
V 型工作台	1 套 / 1 set	Vee-block
微调工作台	1 套 / 1 set	Precise positioning unit



基本配置	数量 / Unit	Basic configuration
调斜工作台	1套 / 1 set	Tiltable measuring table
平口钳	1件 / 1 pc	Parallel vice
校对样块	2块 / 2 pc	Roughness standard

可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
深槽粗糙度传感器	1支 / 1 pc	Recess pick-up
圆弧粗糙度传感器	1支 / 1 pc	Curved surface pick-up
刚性大量程传感器 (1200 μ m)	1支 / 1 pc	Wide range skidless pick-up (1200 μ m)
刚性深槽传感器	1支 / 1 pc	Skidless pick-up for deep recess
刚性接合面传感器	1支 / 1 pc	Skidless pick-up for joint surface
刚性小孔传感器	1支 / 1 pc	Small-bore skidless pick-up for
万向工作台	1套 / 1 set	Universal measuring table
多功能V型块	1件 / 1 pc	Multifunction Vee block
轮廓仪专用底台	1套 / 1 set	Desk for surface profile tester

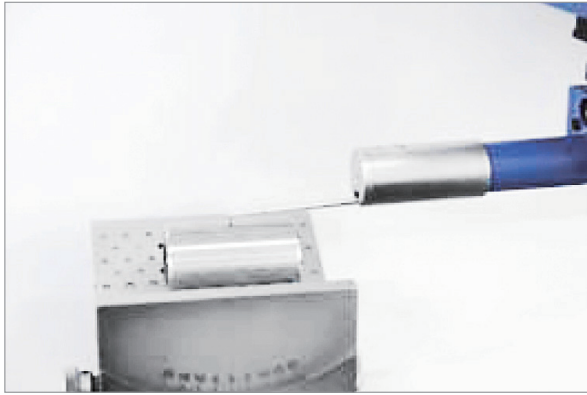
C 技术规格 / SPECIFICATIONS >>>

技术规格	2300A-R
测量原理	垂直方向: 触针法, 电感传感器; 水平方向: 直线光栅
测量范围	垂直: 40 μ m/400 μ m (1200 μ m); 水平: 120mm (200mm)
表面粗糙度 Ra 示值误差	$\leq \pm 5\%$
最小分辨力	垂直: 0.6nm; 水平: 1 μ m
取样长度	0.08mm, 0.25mm, 0.8mm, 2.5mm, 8mm
评定长度	N 倍取样长度, N = 1, 2, 3, 4, 5
数字滤波器	高斯、2RC、PC、二乘、不滤波
粗糙度测量参数	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rdq, Rmr, Rmax, Rz JIS
波纹度测量参数	Wa, Wc, Wp, Wv, Wz, Wq, Wsm, Wt, Wsk, Wku, Wdq, Wmr, Wmax, Wz JIS
原始轮廓测量参数	Pa, Pc, Pp, Pv, Pz, Pq, Psm, Pt, Psk, Pku, Pdq, Pmr, Pmax, Pz JIS
直线度测量系统测量参数	X2-X1 , Z2-Z1
轮廓图形的垂直放大倍率	1-500000 可选, 亦可手动输入
轮廓图形的水平放大倍率	1-50000 可选, 亦可手动输入
驱动箱滑行长度	120mm (200mm)
驱动速度	0.2, 0.5, 0.8, 1.0mm/s
返回速度	1.5mm/s
传感器返回形式	手动, 自动
基准导轨的直线性	1 μ m/100mm
传感器测针	金刚石圆锥, 锥角 90°, 针尖半径 2 μ m
立柱结构	快慢速机动升降系统, 自动对准零位
立柱垂直测量高度	300mm

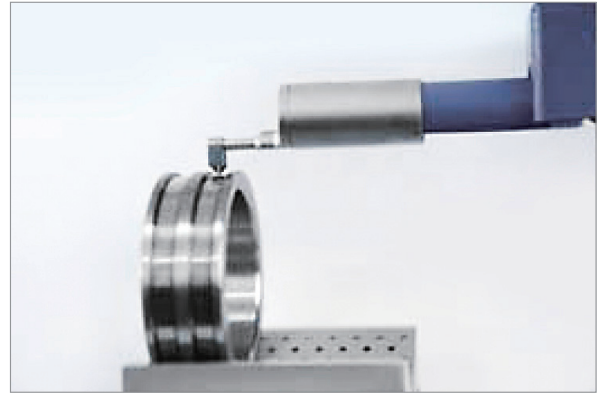
技术规格	2300A-R
工作底台尺寸 (长 × 宽)	720mm×460mm 大理石平台
仪器净重	260kg
仪器毛重	360kg
仪器外形尺寸 (长 × 宽 × 高)	1610mm×460mm×740mm
包装外形尺寸	1065mm×1150mm×1590mm

Specification	2300A-R
Measuring principle	stylus contact method ,inductive(vertical); linear scale(horizontal)
Measuring range	40 μ m/400 μ m (1200 μ m) (vertical); 120mm(200mm)(horizontal)
Ra Indication error of surface roughness measurement	$\leq \pm 5\%$
The smallest resolution	0.6nm(vertical); 1 μ m(horizontal)
Cut-off length	0.08mm, 0.25mm, 0.8mm,2.5mm,8mm
Assessment length	N×cut-off, N = 1, 2, 3, 4, 5
Digital filter type	Gaussian、2RC、PC、least square、non-filtered
Surface roughness parameters	Ra,Rc,Rp,Rv,Rz,Rq,Rsm,Rt,Rsk,Rku,Rdq,Rmr,Rmax,RzJIS
Waviness parameters	Wa,Wc,Wp,Wv,Wz,Wq,Wsm,Wt,Wsk,Wku,Wdq,Wmr,Wmax,WzJIS
Primary profile parameters	Pa,Pc,Pp,Pv,Pz,Pq,Psm,Pt,Psk,Pku,Pdq,Pmr,Pmax,PzJIS
Linearity parameters	X2-X1 , Z2-Z1
Vertical profile magnification	Optional in range from 1-500000 or manual entry
Horizontal profile magnification	Optional in range from 1-50000 or manual entry
Traversing length	120mm (200mm)
Traversing speed	0.2 , 0.5 , 0.8 , 1.0mm/s
Reverse speed	1.5mm/s
Pick-up return mode	manual, auto
Linearity of guideway	1 μ m/100mm
Pick-up stylus	diamond-90°, angle with spherical tip 2 μ m radius
Vertical column adjustment for traverse unit	ballscrew system for motor drive , auto electrical positioning of pick-up
Vertical height adjustment	300mm
Measuring stand (L×W)	granite base:720mm×460mm
Net weight of machine	260kg
Gross weight of machine	360kg
Overall dimensions of the tester (L×W×H)	1610mm×460mm×740mm
Overall dimensions of packing box	1065mm×1150mm×1590mm





测量轴承滚针母线凸度
Measuriement of bearing needle roller genevatrix crown drop shape



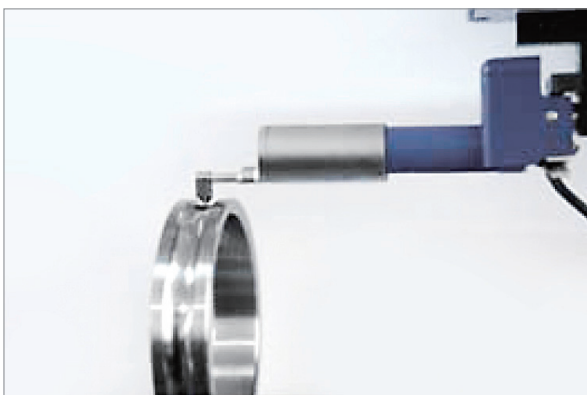
测量滚针轴承滚道表面粗糙度
Measuriement of needle bearing raceway surface roughness



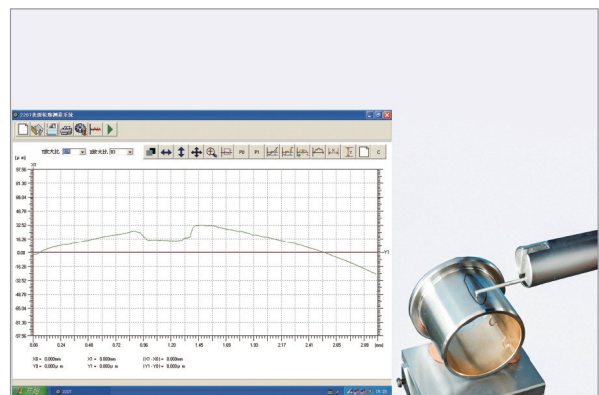
测量轴承挡边粗糙度
Surface roughness measurement of bearing rib



测量轴承滚针端面轮廓
Measuriement of the shape of bearing needle roller end



测量球轴承内环外滚道表面粗糙度
Measuriement of ball bearing outer raceway surface roughness

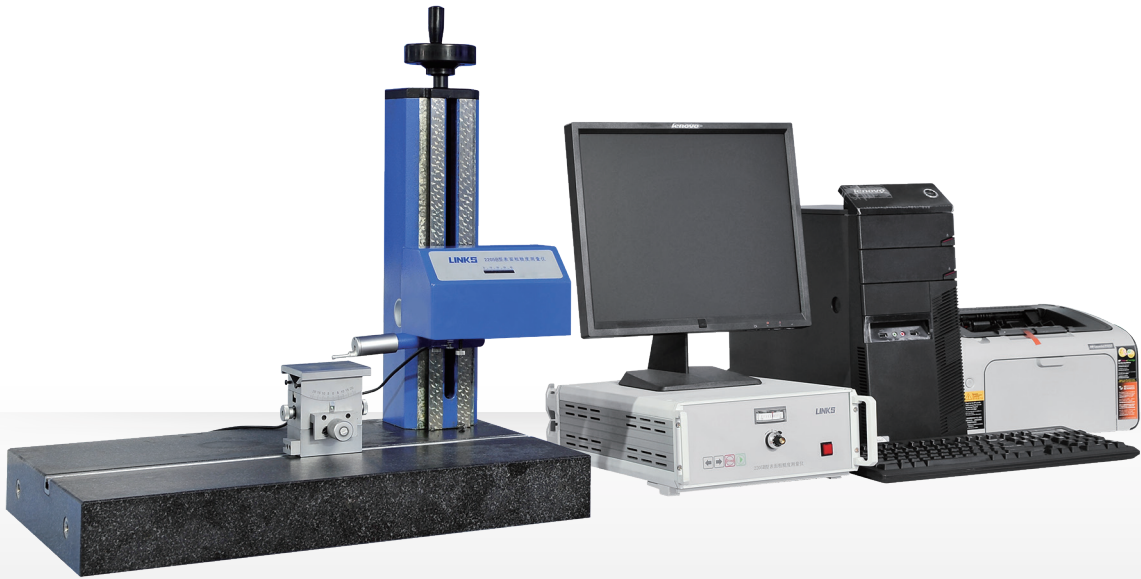


用直线度测量系统测量工件表面划痕的宽度和深度
Checking the width and depth of the scratch on the part surface on the linearity measuring unit



表面粗糙度测量仪 2205B 型

Surface Roughness Tester Model 2205B



A 用途 / APPLICATIONS >>>

本仪器是评定零件表面质量的台式粗糙度测量仪，可对多种零件表面的粗糙度进行测量，包括平面、斜面、外圆柱面、内孔表面、深槽表面、轴承滚道等实现了表面粗糙度的多功能精密测量。

The surface roughness tester is a multi-application measuring instrument for component surface quality evaluation . It is capable of checking the workpiece surface roughness on plane , cylinder , groove and bearing raceway .

B 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
传感器 (标准、深槽)	各 1 支 / 1 pc	Pick-up(standard,deep recess)
电箱	1 套 / 1 set	Electronic unit
微机、打印机	各 1 套 / 1 set	Microcomputer/printer
V 型工作台	1 套 / 1 set	Vee-block
调斜工作台	1 套 / 1 set	Tiltable measuring table
校对样块	2 块 / 2 pc	Roughness standard

可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
圆弧粗糙度传感器	1支 / 1 pc	Curved surface pick-up
刚性粗糙度传感器	1支 / 1 pc	Skidlesse pick-up
万向工作台	1套 / 1 set	Universal measuring table
平口钳	1件 / 1 pc	Parallel vice
微调工作台	1套 / 1 set	Precise positioning unit
轮廓仪专用底台	1套 / 1 set	Desk for surface profile tester

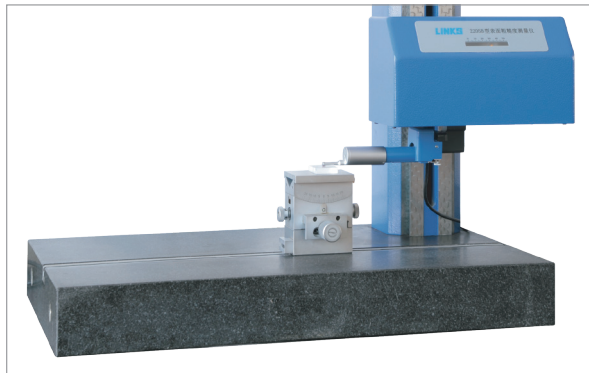
C 技术规格 / SPECIFICATIONS >>>

技术规格	2205B
测量原理	触针法, 电感传感器
测量范围	垂直: 4 μ m/40 μ m/400 μ m; 水平: 50mm
表面粗糙度 Ra 示值误差	$\leq \pm 5\%$
最小分辨力	垂直: 0.06nm; 水平: 1 μ m
取样长度	0.25mm, 0.8mm, 2.5mm
评定长度	N 倍取样长度, N = 1, 2, 3, 4, 5
数字滤波器	高斯、2RC、相位校正、二乘、不滤波
粗糙度测量参数	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rdq, Rmr (符合 GB/T 3505-2009)
轮廓图形	直接轮廓、滤波轮廓、Rmr 曲线, 幅度分布曲线
轮廓图形的垂直放大倍率	1-500000 可选, 亦可手动输入
轮廓图形的水平放大倍率	1-50000 可选, 亦可手动输入
驱动箱滑行速度	0.2mm/s, 0.5mm/s
传感器返回形式	手动, 自动
传感器测针	金刚石圆锥, 锥角 90°, 针尖半径 2 μ m
立柱结构	手动升降
立柱垂直测量高度	280mm
工作底台 (长 × 宽)	720mm × 460mm 大理石平台
仪器净重	250kg
仪器毛重	350kg
仪器外形尺寸 (长 × 宽 × 高)	1620mm × 460mm × 640mm
包装外形尺寸	1065mm × 1150mm × 1590mm

Specification	2205B
Measuring principle	stylus contact method ,inductive pick-up
Measuring range	4 μ m/40 μ m/400 μ m(vertical); 50mm(horizontal)
Ra Indication error of surface roughness measurement	$\leq \pm 5\%$
The smallest resolution	0.06nm(vertical); 1 μ m(horizontal)
Cut-off length	0.25mm, 0.8mm, 2.5mm
Assessment length	N × cut-off, N = 1, 2, 3, 4, 5



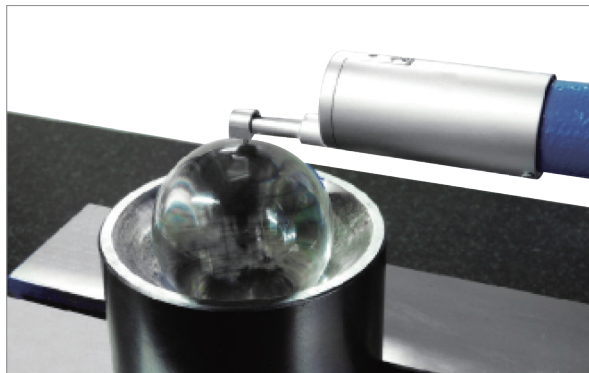
Specification	2205B
Digital filter type	Gaussian、2RC、phase calibration、least square、non-filtered
Surface roughness parameters	Ra,Rc,Rp,Rv,Rz,Rq,Rsm,Rt,Rsk,Rku,Rdq,Rmr (according to GB/T 3505-2009)
Profile graph analysis	macro and unfiltered profiles , Rmr curve , amplitude distribution curve
Vertical profile magnification	Optional in range from 1-500000 or manual entry
Horizontal profile magnification	Optional in range from 1-50000 or manual entry
Traversing speed	0.2mm/s, 0.5mm/s
Pick-up return mode	manual, auto
Pick-up stylus	diamond-90°, angle with spherical tip 2μm radius
Vertical column adjustment for traverse unit	manual adjustment
Vertical height adjustment	300mm
Measuring stand (L×W)	granite base:720mm×460mm
Net weight of machine	250kg
Gross weight of machine	350kg
Overall dimensions of the tester (L×W×H)	1620mm×460mm×640mm
Overall dimensions of packing box	1065mm×1150mm×1590mm



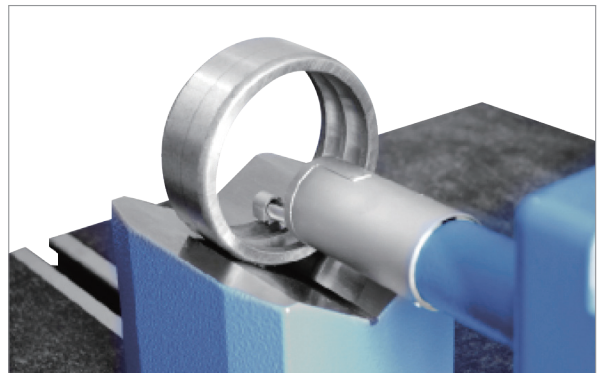
驱动速度为 0.2mm/s 和 0.5mm/s 两档可选，传感器可自动返回。
Selectable traversing speed : 0.2mm/s , 0.5mm/s ; auto return of pick-up is available .



传感器采用金刚石测针，测力小，精度高，寿命长。
Pick-up using a diamond-tip stylus features mini measuring force , optimum accuracy and long service life .

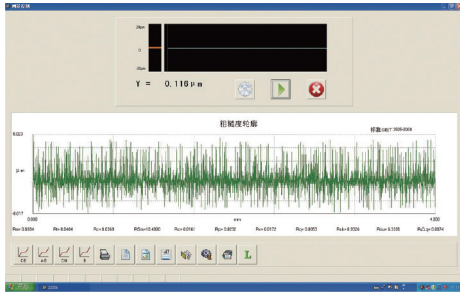


用圆弧传感器测量 $Ra \geq 0.02\mu\text{m}$ 的光滑圆球的表面粗糙度。
Curved surface pick-up , suitable for surface roughness of the sphere component $Ra \geq 0.02\mu\text{m}$.



圆弧粗糙度传感器可用来测量曲率半径不小于 3mm 的曲线粗糙度。
Curved roughness pick-up can be used to measure convex , min 3mm radius .





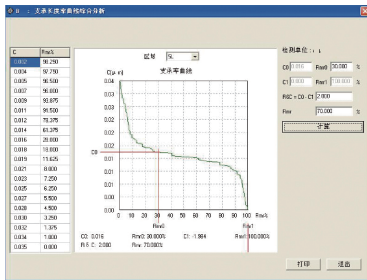
软件功能强大，可以控制测量操作、显示测量数据和图形曲线，并打印测量结果报告。测量粗糙度参数符合现行国家标准 GB/T 3505-2009。

User-friendly and powerful measuring software for measuring process control , surface data/graph display and test report printout . The assessment parameters of the instrument conform to the defintion of surface parameter specified in the Chinese National Standard GB/T 3505-2009 .

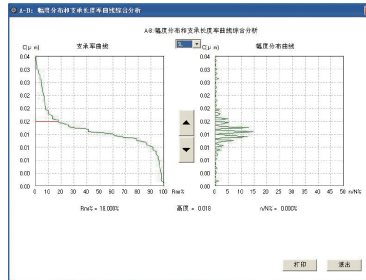
序	1	2	3	4	5	6	7	8	9	10	最大值	最小值	平均值
Ra	0.0034	0.0037	0.0035	0.0036	0.0035	0.0037	0.0035	0.0037	0.0036	0.0036	0.0037	0.0034	0.0035
Ri	0.0069	0.0065	0.0065	0.0066	0.0076	0.0069	0.0071	0.0074	0.0067	0.0065	0.0076	0.0065	0.0069
Rz	0.0069	0.0065	0.0065	0.0066	0.0076	0.0069	0.0071	0.0074	0.0067	0.0065	0.0076	0.0065	0.0069
Rpm	10.4000	10.2000	10.2000	10.0000	10.2000	10.2000	10.0000	10.0000	10.2000	10.0000	10.4000	10.0000	10.1400
Rt	0.0161	0.0067	0.0068	0.0067	0.0070	0.0072	0.0064	0.0073	0.0066	0.0059	0.0073	0.0061	0.0068

测量数据统计功能能够显示并打印多次测量结果的平均值、最大值、最小值。

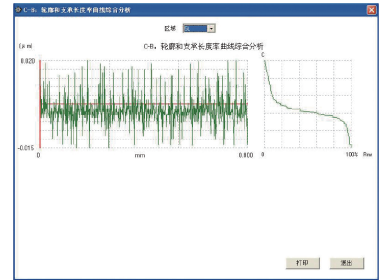
Statistic function display and print the mean value, maximum and minimum value .



表面支承率曲线及数据
Bearing ratio curve and data

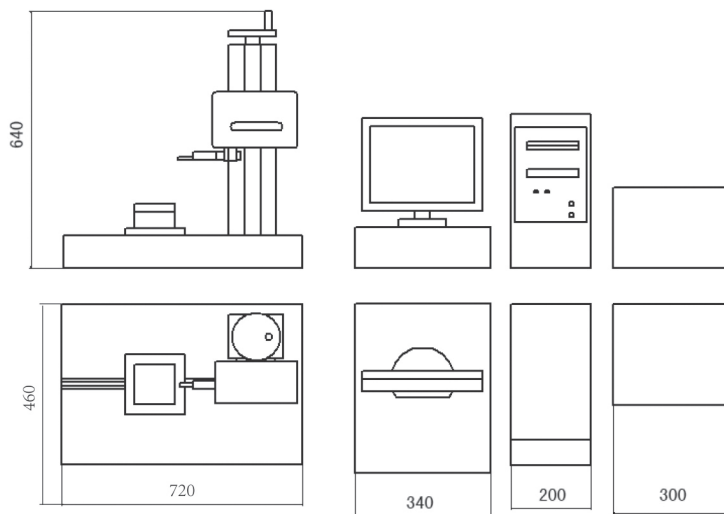


幅度分布曲线 - 表面支承率曲线分析界面
Amplitude distribution curve-bearing ratio curve



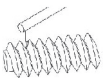
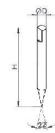

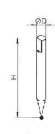


轮廓曲线 - 表面支承率曲线
Surface profile-bearing ratio curve


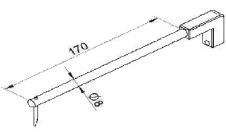
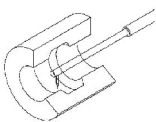
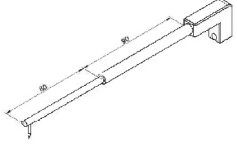
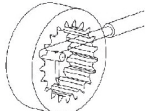
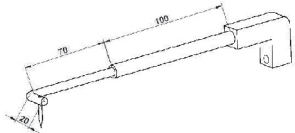
D 安装图 / INSTALLATION LAYOUT >>>



形状传感器测针系列 / STYLUS FOR CONTOUR PROBE

测量示例 Measurement exp.	测针类型 Stylus type	测针半径 Tip radius	滑行角度 Skid angle limit	尺寸 Dimensions			备注 Remarks
				尺寸型号	D	H	
	标准测针 Hatchet tip stylus 	20 μ m	上升角 $\leq 77^\circ$ 下降角 $\leq 88^\circ$	F-3-35	3	33	表中为推荐尺寸，我司可根据用户需求对尺寸进行相应调整。
				F-2-22	2	22	
				F-2-5	1	5	
	圆锥测针 Cone tip stylus 	20 μ m	上升角 $\leq 77^\circ$ 下降角 $\leq 77^\circ$	Z-3-35	3	33	
				Z-2-22	2	22	
	球测针 Ball tip stylus 	1mm	上升角 $\leq 77^\circ$ 下降角 $\leq 77^\circ$	B-3-35-1000	3	33	

形状传感器测杆系列 / PROBE ARM FOR CONTOUR PROBE

测量示例 Measurement exp.	测针类型 Stylus type	备注 Remarks
	标准测杆 ARM-S Normal configured probe arm 	可根据用户需求对尺寸进行相应调整。 Probe arms with different dimensions can be ordered.
	内孔测杆 ARM-H Probe arm for inner hole 	
	弯型测杆 ARM-B Bend probe arm 	

粗糙度传感器 / SURFACE ROUGHNESS PICK-UP

粗糙度传感器可分为有导头传感器和无导头传感器，其中大量程刚性粗糙度传感器测量范围 $\pm 600\mu\text{m}$ ，其他传感器测量范围为 $\pm 200\mu\text{m}$ 。

The roughness pick-up can be divided into a lead pick-up and a non-head pick-up. The range of the large-scale rigid roughness pick-up is $\pm 600\mu\text{m}$, and the measurement range of other pick-ups is $\pm 200\mu\text{m}$.



有导头表面粗糙度传感器

传感器的测针前端镶嵌一颗红宝石导头，传感器主体与驱动箱连接杆之间通过一套浮动式铰链机构连接。测量中，传感器将测针针尖相对于导头的位移量转换为电感量的变化，由电路系统进行信号处理与变换，送入计算机进行粗糙度轮廓的记录与参数计算。

由于采用导头作为测针运动的参考基准，有导头传感器在测量中体现出测量噪声小的优势，可测量 Ra 值不小于 $0.02\mu\text{m}$ 的工件表面粗糙度。但由于导头与测针同时也在被测工件上滑行，在一些被测面积太小的表面，有导头传感器会受到一定的限制，如测量小内孔、小尺寸凹面底部、狭缝底部、细丝或窄边等工件。同时，导头与测针同时也在被测表面滑行，对被测表面的宏观轮廓起到一定的机械滤波作用，在测量工件表面直线度或宏观轮廓起伏等参数时，不能使用。

标准传感器

主要用于平面、圆柱母线等表面粗糙度的测量。

深槽传感器

主要用于槽底表面粗糙度的测量，可测量深度不大于 11mm，行程长度不小于 6mm，宽度不小于 4mm 的深槽底部。

圆弧传感器

主要用于曲面表面粗糙度的测量，可测量 Ra 值不大于 $0.4\mu\text{m}$ 的光滑曲面。

Standard pick-up

It is mainly used for measuring of surface roughness of planes , cylindrical busbars , etc .

Pick-up for deep recess

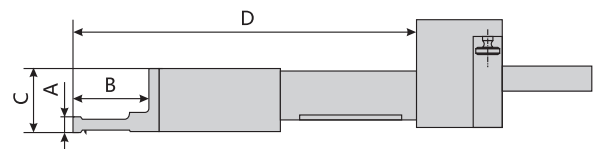
It is mainly used for measuring the surface roughness of the groove bottom. It can measure the depth of the deep groove of no more than 11 mm , the stroke length is no less than 6 mm, and the width is no less than 4 mm .

Curved surface pick-up

It mainly used for the measurement of surface roughness of curved surfaces . Smooth surface with measurable Ra value is no more than $0.4\mu\text{m}$.

Surface roughness pick-up with skid

A ruby guide is placed in front of the stylus of the pick-up, and the pick-up body and the traversing connecting rod are connected by a floating hinge mechanism. In the measurement, the pick-up converts the displacement of the stylus tip relative to the guide head into a change in the inductance, and the signal processing and transformation are performed by the circuit system, and sent to the computer for recording and parameter calculation of the roughness profile.



单位：mm

类型 \ 尺寸	A	B	C	D
标准传感器	6	31	26	90
深槽传感器	18	31	36	90
小孔传感器	5	31	26	90
圆弧传感器	10	31	36	90

Unit: mm

Type \ Dimensions	A	B	C	D
Standard pick-up	6	31	26	90
Pick-up for deep recess	18	31	36	90
Small-bore pick-up	5	31	26	90
Curved surface pick-up	10	31	36	90



无导头粗糙度传感器

传感器主体与驱动箱连接杆之间为刚性连接。测量中，传感器将测针针尖相对于驱动箱基准导轨的位移变化量转换为电感量的变化，由电路系统进行信号处理与变换，送入计算机进行粗糙度轮廓的记录与参数计算。

由于刚性传感器以驱动箱基准导轨作为测针运动的参考基准，测量噪声比有导头传感器大，不适用于超高精度表面的测量，可测量 Ra 值不小于 $0.1\mu\text{m}$ 的工件表面粗糙度。由于没有导头，测针在被测表面的接触点很小，在测量小面积的测量表面时体现出很大的优势。同时，由于克服了导头的机械滤波作用，可用于测量工件表面直线度或宏观轮廓起伏等参数。

标准刚性传感器

主要用于表面粗糙度的测量，卸下托架可测量内径或高度不小于 6mm 的内孔母线或狭缝侧面表面粗糙度。

深槽刚性传感器

主要用于槽底表面粗糙度的测量，可测量深度不大于 11mm，行程长度不小于 2mm，宽度不小于 2mm 的深槽底部。

小孔刚性传感器

主要用于孔内表面粗糙度的测量，卸下托架可测量内径或高度不小于 4mm 的内孔母线或狭缝侧面表面粗糙度。

大量程刚性传感器

主要用于测量复杂形状的表面粗糙度或微观轮廓，如轴承滚道、轴承滚针母线凸度、螺纹表面粗糙度。

刚性结合面传感器

主要用于台阶根部表面粗糙度的测量。

Skidless surface roughness pick-up

The pick-up body and the traverse unit connecting rod are rigidly connected . During the measurement , the pick-up converts the displacement change of the stylus tip relative to the traversing reference rail into a change of the inductance . The signal processing and transformation are performed by the circuit system , sent to the computer to record the roughness profile and calculate the parameters .

Since the rigid pick-up uses the traverse unit reference rail as a reference for stylus movement , the measurement noise is larger than that of the lead pick-up and is not suitable for ultra-high precision surface measurement . Measurable Ra value is no more than $0.1\mu\text{m}$. Since there is no top guide , the contact point of the stylus on the surface to be tested is small , which shows great advantage in measuring a small area of the measurement surface . At the same time, due to the mechanical filtering effect of the top guide , it can be used to measure the surface straightness or macroscopic contour fluctuation of the workpiece .

Skidless pick-up

It is mainly used for the measurement of the conventional surface roughness . The removal bracket can measure the inner hole busbar or the side surface roughness of the slit with an inner diameter or a height of no less than 6 mm .

Skidless pick-up for deep recess

It is mainly used for measuring the surface roughness of the groove bottom. It can measure the depth of the deep groove of no more than 11 mm , the stroke length is not less than 2 mm , and the width is not less than 2 mm .

Small-bore skidless pick-up

It is mainly used for the measurement of the inner hole roughness . The removal bracket can measure the inner hole busbar or the side surface roughness of the slit with an inner diameter or a height of no less than 4 mm .

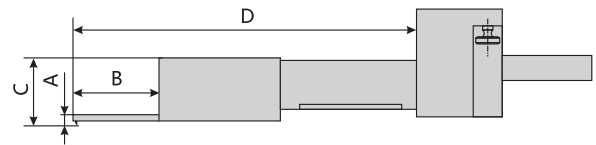
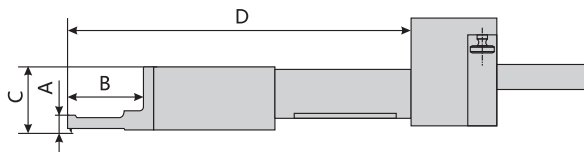
Large meas. Range skidless pick-up

It is mainly used to measure the surface roughness or microscopic contour of complex shapes , such as bearing raceway , bearing needle roller crown , thread surface roughness and so on .

Skidless pick-up for joint surface

It is mainly used for measuring the surface roughness of the root of the step .





单位：mm

类型	尺寸	A	B	C	D
标准刚性传感器	有护套	6	31	26	90
	无护套	4.5	31	26	90
深槽刚性传感器	有护套	18	31	26	90
	无护套	18	31	26	90
小孔刚性传感器	有护套	5	31	26	90
	无护套	3	31	26	90
大量程刚性传感器	无护套	6	50	26	109
刚性结合面传感器	无护套	6	31	26	90

Unit: mm

Dimensions	Type	A	B	C	D
Skidless pick-up	With sheath	6	31	26	90
	Without sheath	4.5	31	26	90
Skidless pick-up for deep recess	With sheath	18	31	26	90
	Without sheath	18	31	26	90
Small-bore skidless pick-up	With sheath	5	31	26	90
	Without sheath	3	31	26	90
Large meas. Range skidless pick-up	Without sheath	6	50	26	109
Skidless pick-up for joint surface	Without sheath	6	31	26	90

表面轮廓评定软件 / SURFACE PROFILE EVALUATION SOFTWARE

表面轮廓评定软件是评定测量轮廓的形状和位置误差的应用软件，可评定任何两点间的距离，两线夹角、圆弧半径，并可对轮廓进行直线度、圆度分析等。

2300A-C 型表面形状测量仪和 2300A-RC 型表面轮廓测量仪均配备了此软件。它在操作方式与界面风格上力求与 CAD 软件保持一致，使测量操作人员更加容易掌握其操作方法。在评定功能和尺寸标注方面，也和 CAD 软件保持一致，维护了测量检测与设计的对偶性与承接性。

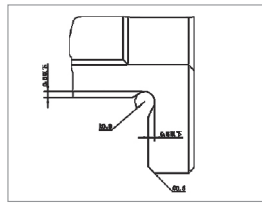
它充分体现了新一代计算数学的精髓，使分离、提取、滤波、拟合、集成、构造操作贯穿了检测与评定的全过程。

Surface profile evaluation software is used to evaluate the foem and position error of measured profile . It can access parameters such as distance between points , included angle , arc radius , etc . Together with the straightness and rounghness analysis for the profilr .

It is equipped on surface profile testers including model 2300A-C and model 2300A-RC working in the CAD style makes it easy foe the operators using it to master its operation rules . Being consistent with CAD in the evaluation parameters and indication manners also keeps the conformance between design and inspection .

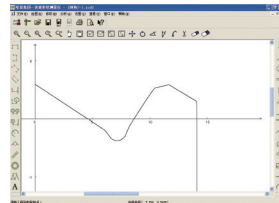
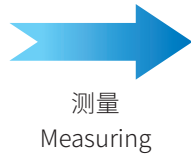
The software demonstrate the cutting edge tecnology of modem metrological mathematics , while making the partition , extraction , filtration , fitting , collection , construction , run through the whole process of measurement and evaluation .





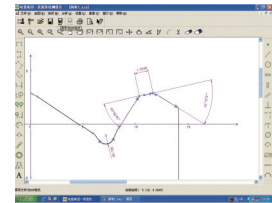
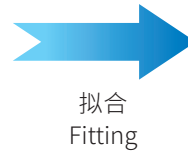
机械设计图(局部)规定了被测工件的标称尺寸和公差要求。

Design drawing document specifies the nominal dimension for the measured part , together with the tolerance .



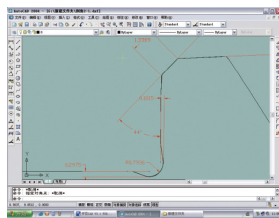
测量得到轮廓。满足上升角、下降角要求, 测量轮廓需要偏转一个角度。

Measured profile . In order to carry out the measurement , the part should be rotated .



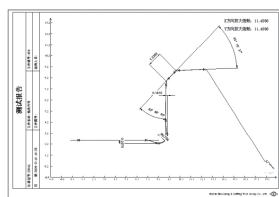
在测得轮廓上拟合直线、圆弧等要素, 评定各要素间的角度、圆弧半径、距离等参数值, 标注在轮廓图上。

Fitting elements such as straight lines and arcs to evaluate angles , arc radii , distances and mark them on the profile graphics .



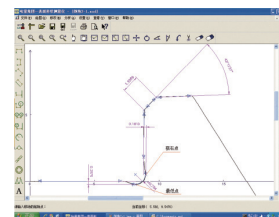
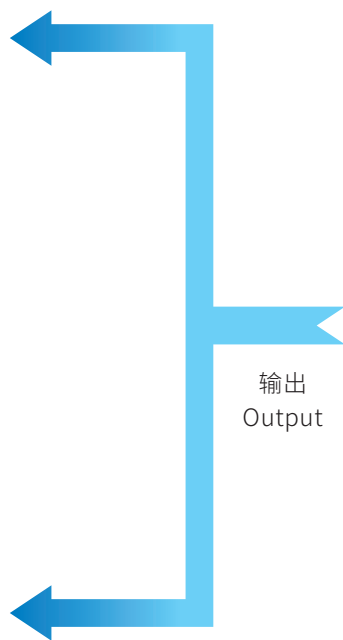
测量结构还可以保存为 AUTO CAD 软件可以打开的 DFX 文件格式。

The measured profile and evaluation results can be saved in DFX files for AUTO CAD purpose .



可输入用户信息, 并将轮廓图形和测量结果打印输出。

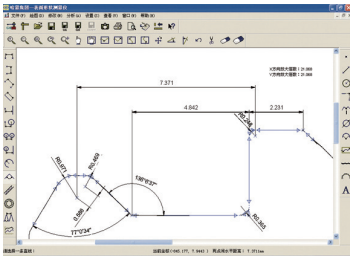
Information of the measurement such as part name , time ,etc . can be input , and the test report including the measured profile and results can be printed out .



通过坐标旋转将测量轮廓调平拾取最低点和极右点, 以标注圆的切线与拟合轮廓线之间的距离。

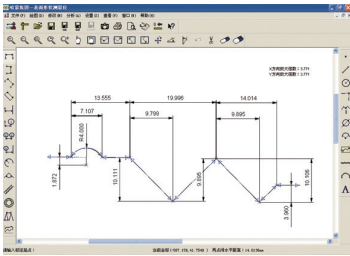
Level the profile by rotation . Collect the lowest point and the right most point . Then evaluate the distance between the associated lines and the collect point .





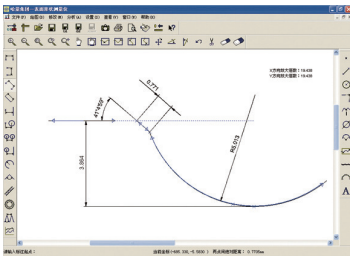
评定各要素间的几何关系，如点到直线距离、点到点距离、点到投影距离、圆心到圆心距离、圆心到直线距离、直线夹角、圆弧半径等诸多参数，还可以测量直线度、圆度误差。

The software can evaluate and indicate the geometrical relationships among features , such as distance between point and line , point and point , the projection distance of point , distance between cricle centers , between cricle center and line , included angle , arc radius , besides straightness and roundness .



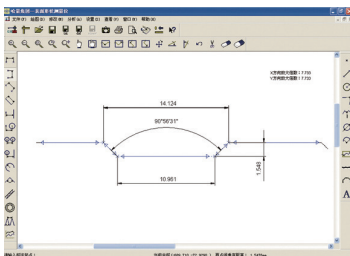
拟合特征点、特征线、特征圆等几何要素，做辅助线，将被测的轮廓转换为可测量的几何要素的集合。对于复杂工件的多尺寸评定，实现了同一几何要素的一次拟合，降低了表面加工不规则性和重复人为选点带来的测量误差。同时，多尺寸测量的效率将大大提高。

By associating geometrical fetyres and drawing auxiliary features , we have got geometrical feature set that can be evaluated . For the multi dimension evaluation of omplicated parts , the evaluation error because of the irregularity of the surface and repeatability of several associations have been greatly reduced by one associate process only for the same feature . Mean while , the efficiency of multi dimension evaluation will be greatly increased .



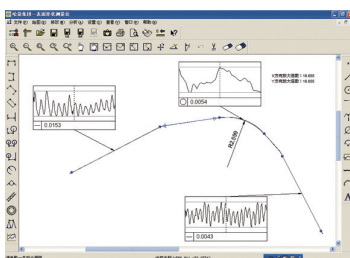
测量摇臂蜗杆的球窝半径、高度等参数。

Measuring the rocker socket for arc radius , height , and arc roundness .



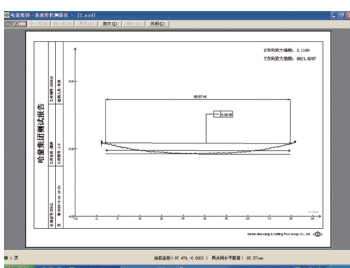
测量沟槽的高度、宽度、角度等参数。

Measuring grooves for height , width , included angle , etc .



直线度、圆度标注、图形化标注轮廓的直线度、圆度要素，通过对垂直方向的放大，可以直观的展示微观轮廓变化。

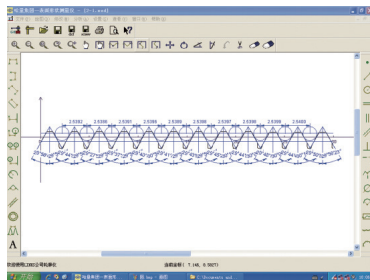
Make of straightness and roundness Features such as straightness and roundness of measured profile are marked . The micro detail of the profile is expressed visually by magnification in vertical direction .



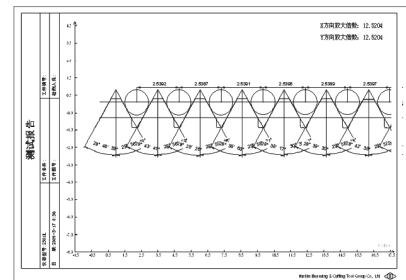
可在水平、垂直方向设置不同放大比，以便清楚地观察轮廓的变化趋势。可根据 CAD 方式评定并标注轮廓的直线度。

Different magnification can be specified in vertical and horizotal directions , so as to observe the profile more clearly . The straightness of the profile can be evaluated and indicated an CAD .

螺纹测量模块 / SCREW EVALUATION MODULE



文件(F)	编辑(E)	格式(O)	查看(V)	帮助(H)
1	螺距P(毫米)	牙侧角α1(度)	牙侧角α2(度)	牙型角α(度)
2	2.539	29.811	29.947	59.758
3	2.539	29.728	29.958	59.618
4	2.539	29.474	29.929	59.483
5	2.540	29.688	29.975	59.575
6	2.539	29.658	29.865	59.783
7	2.540	29.658	29.971	59.629
8	2.540	29.711	29.964	59.675
9	2.540	29.752	29.993	59.745
10	2.540	29.734	29.962	59.696
11	2.540	29.788	29.987	59.775
12	2.540	29.722	29.968	59.691
标准值	2.540	29.826	29.848	59.666
最大值	2.540	29.826	29.865	60.000
最小值	2.539	29.474	29.848	59.483
平均值	2.539	29.783	29.943	59.666



螺纹测量模块是专为螺纹测量开发的软件模块，只需输入螺纹标准螺距、牙形角、锥角等信息，即可一次评定出该螺纹的所有螺距、牙侧角，并标注在螺纹轮廓上。

Screw evaluation module is specially designed for screw measurement. All operators should do is to input the nominal information such as, pitch, tooth flank angle, axis angle, etc. then parameters of each tooth, including pitch, tooth flank angle, will be evaluated and indicated on the profile immediately.

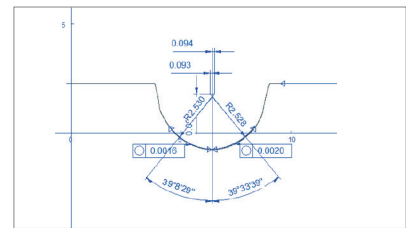
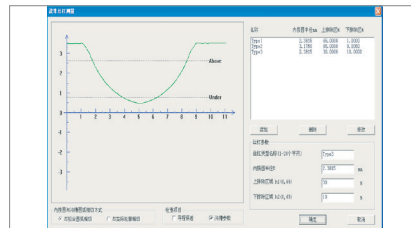
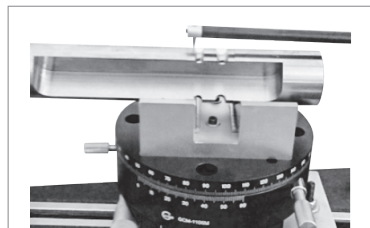
测得的螺纹各牙形的参数值及最大值、最小值、平均值、标准偏差等统计信息可以以文本格式储存起来，以便于生产企业的检验数据管理。

All measured parameter results and its statistical data such as the maximum, minimum, average, deviation, can be saved in .txt format file, which will facilitate the inspection data management.

可以打印输出螺纹轮廓及标注、螺纹参数值及其统计信息。轮廓图形可保存为 AUTO CAD 软件可读取的 DXF 格式，以便于设计和生产人员进行技术分析。

The measured screw profile and its indication, together with the measured parameter values and their statistical information can be printed out. The profile can be also be saved in DXF file, which can be accessed by AUTO CAD. This is helpful to engineers and production workers for technical discussion.

滚珠丝杠测量模块 / SCREW EVALUATION MODULE



滚珠丝杠是一种重要的传动通用部件，广泛应用于各种机械系统。主要评定参数包括：滚道前/后两端圆弧的半径和圆轮廓度、与标称直径的钢球相切的前/后接触角、前/后两段圆弧圆心与内接滚珠圆心的水平和垂直方向距离、沿丝杠母线方向的导程等。

Ball screw are essential general transmission components that are widely used in all kinds of machinery system. The main evaluation parameters include radius and profile tolerance of the front and rear ball tracks, front and rear tangential contact angle with the nominal diameters of the steel balls, the horizontal and vertical distances between the center of the circle arc and the incircled ball center, and the lead along the screw generatrix and so on.

滚珠丝杠评定功能提供了两种内切圆与沟槽圆弧相切的方式：与拟合圆弧相切和与实际轮廓相切，用户可根据需要，灵活选择。用户只需选中此功能模块，输入内切圆半径、上排除区域 h1 和下排除区域 h2，即可获得所要评定的参数。

There are two options to evaluate internally tangent circle that is tangential to the groove arc of the ball screw, one is tangential to the fitted circle arc and the other is tangential to the actual profile. Users can choose in according to their needs. And users only need to choose the function module and click on the profile to be evaluated, then enter the radius of internally tangent circle, the upper elimination zone h1 and lower elimination zone h2, then the evaluation results will be obtained.

评定结果可以保存为 XZD 格式，可以用本软件打开；也可以保存为 DXF 格式，可以用 AUTO CAD 读取；或者保存为 TXT 格式和 EXCEL 报表格式。

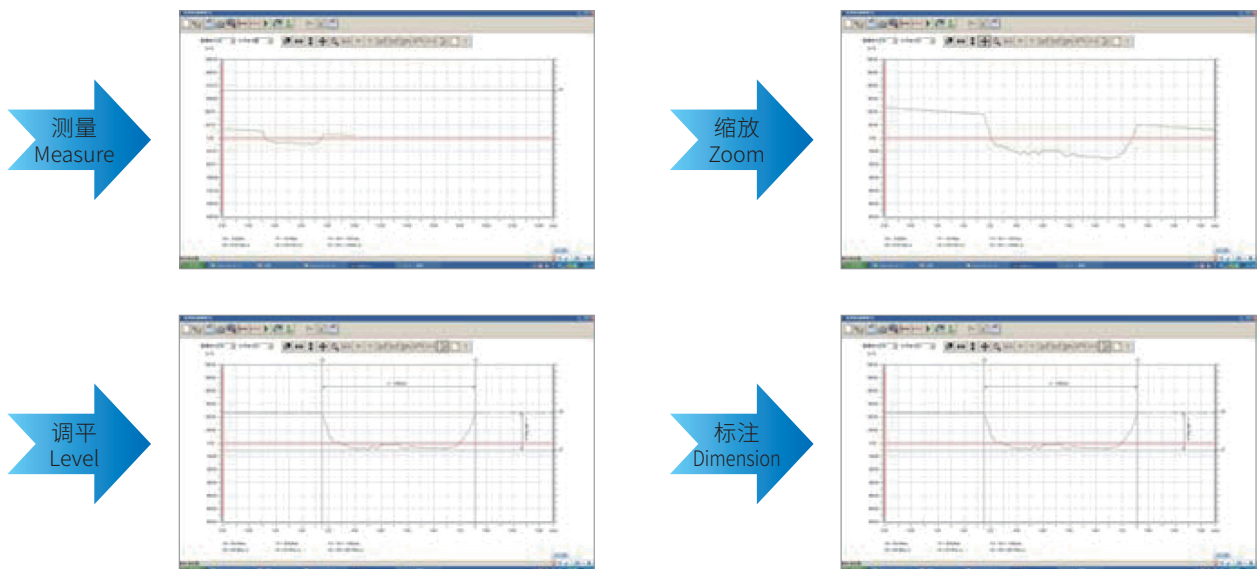
The results can be saved in .XZD format that can be opened in this software. Or it can be saved as .DXF format and open in AUTO CAD software, or saved in .TXT and EXCEL formats as well.

微观轮廓测量评定软件 / MICRO PROFILE EVALUATION SOFTWARE

微观轮廓测量评定软件是测量评定工件表面粗糙度、波纹度、原始轮廓等表面结构参数和轮廓高度、宽度、直线度等微观轮廓参数的综合性评定软件，应用于哈量集团的表面轮廓测量仪产品。该软件系统可以对一次测量得到的微观轮廓进行表面结构和表面轮廓的多重综合分析，并提供了轴承凸度评定，珩磨表面粗糙度评定等软件模块。

Micro profile evaluation software is a set of comprehensive software used to evaluate surface texture parameters such as surface roughness , waviness primary profile , together with contour parameters , such as height , width , straightness , etc . The software is applied to surface profile testers from HMCT GROUP . It provides multiple specified evaluation to the measured workpiece within one measurement operation . It also provides many evaluation module such as honed surface evaluation module and crown drop of the bearing rolling evaluation module .

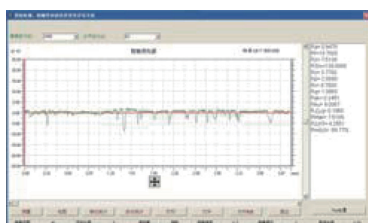
微观轮廓评定功能 / MICRO CONTOUR EVALUATION FUNCTION



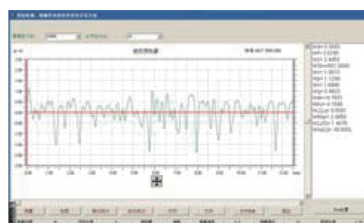
表面结构参数评定功能 / SURFACE TEXTURE EVALUATION FUNCTION

测得滤波后轮廓以设定的垂直和水平放大比显示，并可计算最佳显示放大比。根据 GB、ISO、JIS 标准评定的表面结构（表面粗糙度、波纹度、原始轮廓）参数值显示在参数表中。

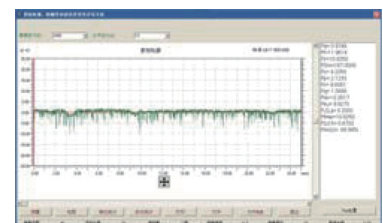
The measured profile can be displayed at set vertical and horizontal scale or at the optimized scale computed automatically . The surface texture (surface roughness , waviness , primary profile) parameter measured result computed according to GB , ISO , DIN , JIS standards is displayed on the screen .



粗糙度轮廓曲线及参数
Surface roughness profile and measured results



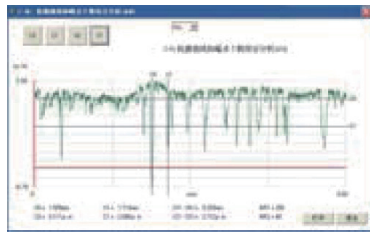
波纹度轮廓曲线及参数
Waviness profile and measured results



原始轮廓曲线及参数
Profile and measured results for primary profile



图形分析功能 / GRAPHIC ANALYSIS FUNCTION

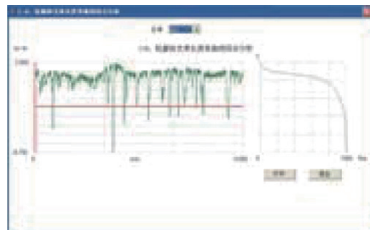


轮廓峰密度

Profile peak density

设定两个高度阈值 C1, C2 后, 计算轮廓峰数 NR 值。

After setting two level threshold C1, C2 the profile peak number NR is computed .

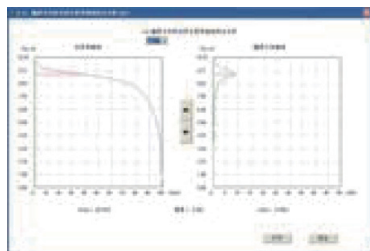


轮廓和支承长度率曲线

Profile and bearing ratio curve

指定取样长度的轮廓曲线及对应的相对材料比率曲线。

Measured profile and according bearing ratio curve at desigated cut-off length .

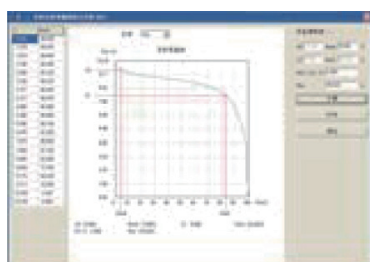


幅度分布和支承长度率曲线

Amplitude distribution curve and bearing ratio curve

相对材料比率曲线与对应的幅度分布曲线, 通过指定高度值 C 计算对应高度的相对材料比率 Rmr 值和概率密度 n/N% 值。

Relative material ratio curve and corresponding amplitude distribution curve . The Rmr value and probability density value n/N% at the set level C value are computed .



相对材料比率曲线

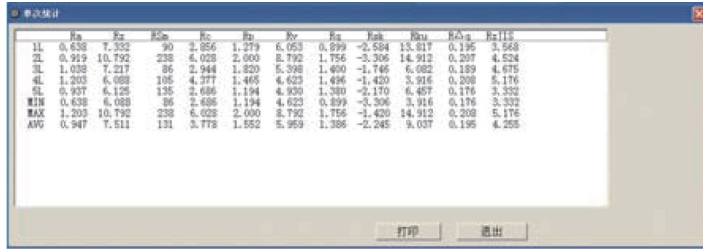
Relative material ratio curve

相对材料比率曲线的综合分析窗口, 根据国家标准计算相对材料比率 Rmr 值和相对高度 C 值, 用于评定被测表面的耐磨度。

In the relative material ratio curve analysis window , the relative material ratio Rmr and the level C is computed according to GB/T 3505 .



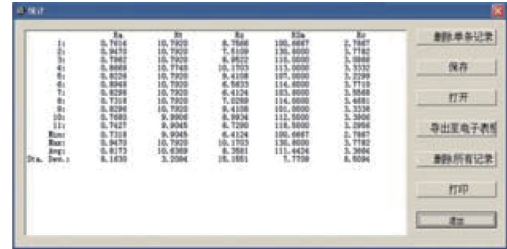
统计功能 / STATISTIC FUNCTION



单次统计

Statistical report for one measurement

单次统计显示各评定长度（取样长度）段内的粗糙度参数值，并计算几段评定长度（取样长度）内参考值的最小值、最大值、平均值等统计量。Display measured results of surface texture parameters whthin each cut-off length , or within each evaluation length . The statistical results such as minmal value , maximam value , average value of each parameter are also shown .



多次统计

Multiple measurements statistical report

显示多次测量得到的表面粗糙度参数值，并计算出每个参数在多次测量中的最小值、最大值、平均值等统计量。Multi measurements statistical function can display measured results within multiple measurement procedures . The statistical results such as minmal value , maximam value , average value of each parameter are also shown .

专业评定模块 / SPECIALIZED EVALUATION MODULE

轴承行业凸度和粗糙度评定模块

Proble evaluation module used in bearing industry

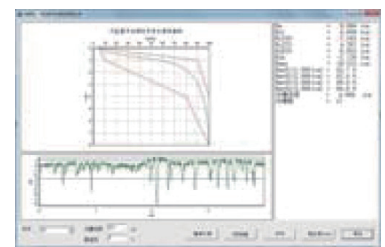
选择合适的截止波长，点击“确定”按钮，进入轴承滚道凸度评定界面，系统自动计算出轮廓曲线的最大误差。此项功能用于评定轴承滚道凸度。After disgnating low-pass filter cut-off length , we can enter crown drop for bearing rolling pin evaluation interface . It can compute the straightness of the specified profile .



内燃机气缸套平台网纹评定模块

The plateau cross hatch evaluation module used in combustion engine industry

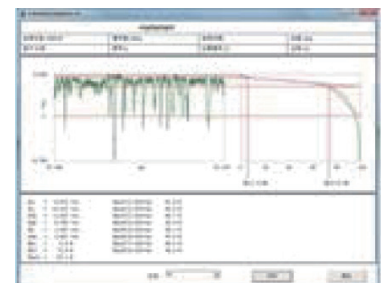
根据 JB/T 5082.7-2011 评定内燃机汽缸套珩磨表面 The module is a specialized sotware that evaluate surface roughness according to JB/ T 5082.7-2011



用线性化的支承率曲线表征高度特性的评定模块

Structured surface

根据 GB/T 18778.2 (ISO 13565.2) 评定珩磨表面的 Ra、Rz、Rsk、Rpk、Rk、Rvk、Mr1、Mr2 等参数。A specialized software module that evaluate surface roughness parameters according to GB/T 18778.2(ISO 13565.2) .



便携式表面粗糙度测量仪 2226 型

Portable Surface Roughness Tester Model 2226



A 用途 / APPLICATIONS >>>

2226 型表面粗糙度测量仪是高精度的便携式仪器，主要用于机械加工企业和计量部门的生产现场对工件表面质量进行检测，可测量平面、圆柱母线、内孔等表面的粗糙度。

Model 2226 surface roughness tester is a high accurate portable measuring instrument. It is ideal for fast analysis and evaluation of component surface e.g. plane, cylinder, bore and curved surface in all engineering environments.

B 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
标准传感器	1 支 / 1 pc	Standard pick-up
电箱	1 套 / 1 set	Electronic unit
打印机	1 套 / 1 set	printer
校对样块	1 块 / 1 pc	Roughness standard
专用充电器	1 套 / 1 set	Battery charger



可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
精调平台	1套 / 1 set	Small-size instrument stand
支承底台	1套 / 1 set	Bearing plate
调斜工作台	1套 / 1 set	Tilttable measuring table
平口钳	1件 / 1 pc	Parallel vice
加长杆 100mm、200mm	各 1支 / 1 pc	Pick-up extrnsion 100mm , 200mm
多功能 V 型块	1件 / 1 pc	Vee-block

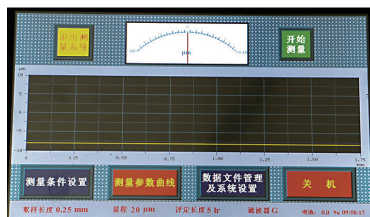
C 技术规格 / SPECIFICATIONS >>>

技术规格	2226
测量原理	触针法, 电感传感器
测量范围	触针最大位移 120 μ m ; Rt \leq 120 μ m ; Ra: 0.05 μ m-12 μ m
表面粗糙度 Ra 示值误差	$\leq \pm 10\%$
最小分辨力	0.005 μ m
取样长度	0.25mm, 0.8mm, 2.5mm
评定长度	N 倍取样长度, N = 3, 4, 5
数字滤波器	高斯滤波器、PC 滤波器
量程	$\pm 10\mu\text{m}, \pm 60\mu\text{m}$
粗糙度测量参数	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rmr (符合 GB/T 3505-2009)
打印垂直放大比	≤ 20000 倍
打印水平放大比	20/60/200 倍
驱动箱滑行速度	0.5mm/s, 1mm/s
传感器测针	金刚石圆锥, 锥角 90°, 针尖半径 5 μ m
工作温度	5°C -40°C
电源	内置锂聚合物可充电电池组 (5500mAh), 外接专用充电器
仪器净重	2.4kg
仪器毛重	15kg
仪器外形尺寸 (长 \times 宽 \times 高)	300mm \times 240mm \times 180mm
包装外形尺寸	694mm \times 480mm \times 290mm

Specification	2226
Measuring principle	stylus contact method ,inductive pick-up
Measuring range	stylus displacement 120 μ m ; Rt \leq 120 μ m ; Ra: 0.05 μ m-12 μ m
Ra Indication error of surface roughness measurement	$\leq \pm 10\%$
The smallest resolution	0.005 μ m
Cut-off length	0.25mm, 0.8mm, 2.5mm
Assessment length	N \times cut-off, N = 3, 4, 5
Digital filter type	Gaussian、PC
Measuring stroke	$\pm 10\mu\text{m}, \pm 60\mu\text{m}$

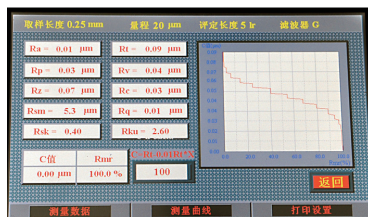


Specification	2226
Measuring parameters	Ra,Rc,Rp,Rv,Rz,Rq,Rsm,Rt,Rsk,Rku,Rmr (according to GB/T 3505-2009)
Vertical magnification	≤ 20000
Horizontal magnification	20/60/200
Traversing speed	0.5mm/s, 1mm/s
Pick-up stylus	diamond-90°, angle with spherical tip 5μm radius
Operating temperature	5°C -40°C
Power supply	Build-in Li-Polymer rechargeable battery pack(5500mAh),plug-in battery charge
Net weight of machine	2.4kg
Gross weight of machine	15kg
Overall dimensions of the tester (L×W×H)	300mm×240mm×180mm
Overall dimensions of packing box	694mm×480mm×290mm



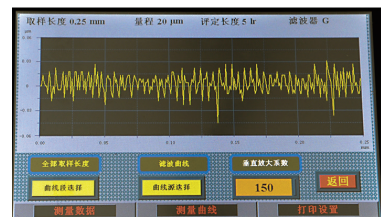
触屏按键，人机界面友好，操作简捷方便，万次以上的测量源数据储存功能。

Touch screen buttons . Friendly human-machine interface . Simple and convenient operation . Large storage size of more than 10,000 orugbak measurement data.



大屏幕显示，所有测量参数一页显示，无需翻页。

Large display screen . All measurement parameters can be displayed on one page without page up and down .



测量曲线高分辨率显示

Measurement curves and charts with high-resolution.



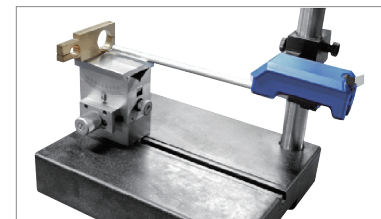
灵活的打印输出设置

Flexible printing output setting



仪器体积小，重量轻，可以随身携带。驱动箱小巧轻便，可以在水平、垂直、向上等任意位置测量。

With small size and light weight . Handy measurement in horizontal , vertical or upward direction is also possible .



配置加长杆，可测量深度不大于210mm的内孔粗糙度。

Checking roughness of internal bore max. 210mm deep with stylus extension of 200mm .



便携式齿面粗糙度测量仪 T1000C 型

Portable Tooth Flank Roughness Tester Model T1000C



A 用途 / APPLICATIONS >>>

T1000C 型齿面粗糙度测量仪主要用于生产现场和计量检测部门对齿轮齿面的表面进行检测。可测量模数 2mm 以上的齿轮和齿轮刀具的齿面粗糙度，还可以测量平面、圆柱表面、曲面等工件的表面粗糙度。

Model T1000C portable tooth flank roughness tester is specially designed for measuring the surface roughness on the flat, cylindrical and curved parts as well as gears with more than 2mm module on the machining site and metrological service.

B 仪器组成 / SET OF MACHINE INCLUDES >>>

基本配置	数量 / Unit	Basic configuration
立柱	1 台 / 1 pc	Column
驱动箱	1 套 / 1 set	Traverse unit
标准传感器	1 支 / 1 pc	Standard pick-up
齿面传感器	1 支 / 1 pc	Tool flank pick-up
电箱 / 打印机	各 1 套 / 1 set	Electronic unit / printer
校对样块	1 块 / 1 pc	Roughness standard
专用充电器	1 套 / 1 set	Battery charger
支承底台	1 套 / 1 set	Bearing plate

可选附件 (价格另议)	数量 / Unit	Optional configuration(at extar cost)
精调平台	1套 / 1 set	Small-size instrument stand
圆弧传感器	1支 / 1 pc	Curved surface pick-up
调斜工作台	1套 / 1 set	Tiltable measuring table
平口钳	1件 / 1 pc	Parallel vice
加长杆 100mm、200mm	各 1支 / 1 pc	Pick-up extrnsion 100mm , 200mm
多功能 V 型块	1件 / 1 pc	Vee-block

C 技术规格 / SPECIFICATIONS >>>

技术规格	T1000C
测量原理	触针法, 电感传感器
测量范围	触针最大位移 100 μ m ; $R_t \leq 80\mu\text{m}$; $R_a: 0.05\mu\text{m}-8\mu\text{m}$
表面粗糙度 R_a 示值误差	$\leq \pm 10\%$
最小分辨力	0.005 μ m
取样长度	0.25mm, 0.8mm, 2.5mm
评定长度	N 倍取样长度, N = 1, 2, 3, 4, 5
数字滤波器	高斯滤波器、RC 滤波器、PC 滤波器
量程	$\pm 10\mu\text{m}, \pm 25\mu\text{m}, \pm 50\mu\text{m}$
粗糙度测量参数	$R_a, R_c, R_p, R_v, R_z, R_q, R_{sm}, R_t, R_{sk}, R_{ku}, R_{dq}, R_{mr}$ (符合 GB/T 3505-2009)
打印垂直放大比	≤ 20000 倍
打印水平放大比	10/40/100 倍
驱动箱滑行速度	0.15mm/s, 0.5mm/s, 1mm/s
传感器测针	金刚石圆锥, 锥角 90°, 针尖半径 5 μ m
工作温度	5°C - 40°C
电源	内置锂聚合物可充电电池组 (5500mAh), 外接专用充电器
齿面传感器可测量齿轮最小模数	2mm
仪器净重	1.2kg
仪器毛重	15kg
仪器外形尺寸 (长 × 宽 × 高)	340mm × 145mm × 240mm
包装外形尺寸	694mm × 480mm × 290mm

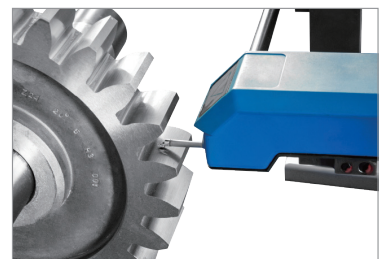
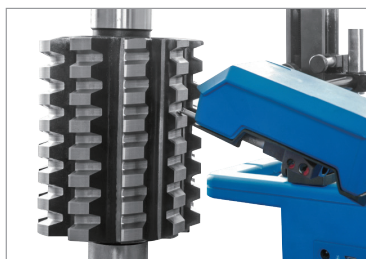
Specification	T1000C
Measuring principle	stylus contact method , inductive pick-up
Measuring range	stylus displacement 100 μ m ; $R_t \leq 80\mu\text{m}$; $R_a: 0.05\mu\text{m}-8\mu\text{m}$
R_a Indication error of surface roughness measurement	$\leq \pm 10\%$
The smallest resolution	0.005 μ m
Cut-off length	0.25mm, 0.8mm, 2.5mm
Assessment length	N × cut-off, N = 1, 2, 3, 4, 5
Digital filter type	Gaussian、RC、PC




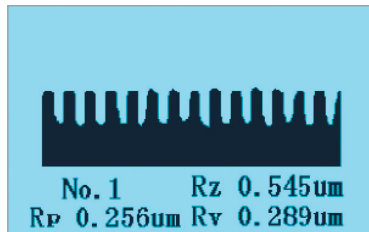
Specification	T1000C
Measuring stroke	±10μm, ±25μm, ±50μm
Measuring parameters	Ra, Rc, Rp, Rv, Rz, Rq, Rsm, Rt, Rsk, Rku, Rdq, Rmr (according to GB/T 3505-2009)
Vertical magnification	≤ 20000
Horizontal magnification	10/40/100
Traversing speed	0.15mm/s, 0.5mm/s, 1mm/s
Pick-up stylus	diamond-90°, angle with spherical tip 5μm radius
Operating temperature	5°C -40°C
Power supply	Build-in Li-Polymer rechargeable battery pack(5500mAh), plug-in battery charge
Min.module to be tested	2mm
Net weight of machine	1.2kg
Gross weight of machine	15kg
Overall dimensions of the tester (L×W×H)	340mm×145mm×240mm
Overall dimensions of packing box	694mm×480mm×290mm

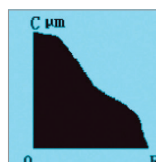
D 特点 / FEATURES >>>

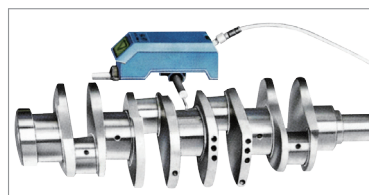
- T1000C 型齿面粗糙度测量仪体积小、重量轻、携带方便、装卡灵活，尤其在测量齿轮表面粗糙度方面有独特的作用。
- 随机配备两支传感器，标准传感器、齿面传感器，还包括驱动箱、电箱等主要部件。
- 可测量 GB/T 3505-2009 规定的所有粗糙度参数。
- 可选择 RC、PC、高斯三种滤波器对测量结果进行数据处理。
- 可根据被测齿面和工件表面粗糙度要求及形状尺寸要求，灵活选择取样长度和评定长度，以满足测量要求。
- 被测参数和轮廓曲线可在液晶屏上显示，也可打印出来。
- 可以在水平、垂直、向上等任意位置测量，驱动箱固定在简易底台的立柱上，可以灵活的调整位置和姿态，可满足复杂齿面的高精度测量要求。
- Modle T1000C tooth flank roughness tester with small size and light weight is convenient to use on the shopfloor . It shows more competitive advantages on checking gear tooth flank roughness .
- Modle T1000C comprises electronic units , traverse unit , standard and tooth flank roughness pickup .
- It has capacity of checking all roughness parameters specified in GB/T 3505-2009 .
- RC、PC、 gaussian filter can be selected for profile date analysis .
- Cut-off length and assessment length can be freely specified according to the size or shape of measured parts .
- Surface roughness parameters and profile curves are displayed on the LCD screen , and can be printed out if required .
- Traverse unit assembled on the column fixed on bearing plate can adjust its position easily . It is flexible to measure various gears with complex shap with high precision .



	MODEL	T1000A	
	+2.036 Ra	0.36	μm
	Rq	0.82	μm
	Rz	3.68	μm
	Rt	3.92	μm
	5×Lr	Lr 0.25mm	Mb ±25mm GS

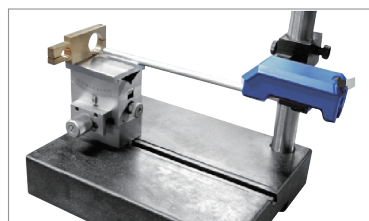


	C μm	C μm	Rmr %
		3.96	00.0
		3.15	25.0
		2.86	50.0
		2.04	75.0
	C0 2.36 μm	Rmr0	58.6 %
	R&C 2.18 μm	Rmr1	96.3 %



传感器能旋转 90°，可测量曲轴等复杂工件的表面粗糙度。

Pick-up can be swiveled through 90° for measurement of complex workpiece surface such as crank shaft.



配置加长杆，可测量深度不大于 210mm 的内孔粗糙度。

Checking roughness of internal bore max. 210mm deep with stylus extension of 200mm.



仪器体积小，重量轻，可以随身携带。驱动箱小巧轻便，可在水平、垂直、向上等任意位置测量。

With small size and light weight. Handy measurement in horizontal, vertical or upward direction is also possible.



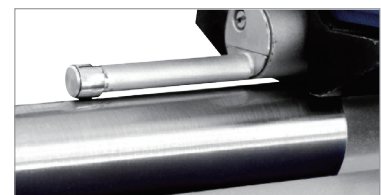
配置精调平台、调斜工作台等附件，可以对工件的复杂表面进行高精度测量。

When used in conjunction with the instrument base and adjustable worktable, the instrument is suitable for high accurate measurement on complex surface of workpiece.



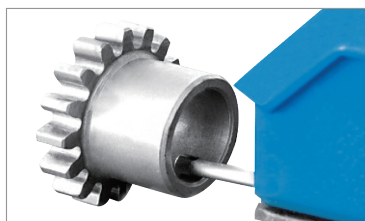
配置圆弧传感器，可测量圆弧半径不小于 3mm 的曲面粗糙度。

Curved surface pick-up, suitable for convex surface not less than 3mm radius.



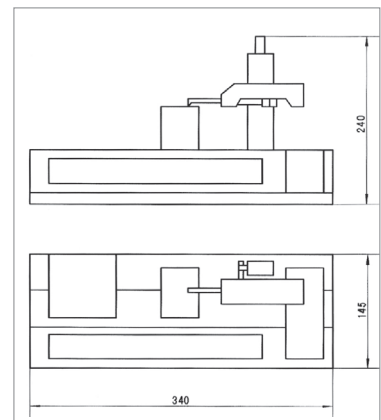
可测最小圆柱直径 3mm

Checking convex surface of min. 3mm diameter



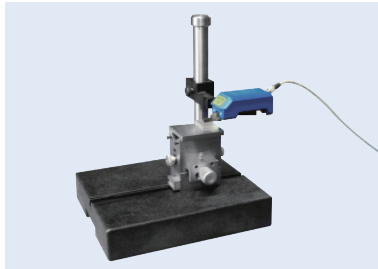
可测最小内孔直径 6mm

Checking bores of min. 6mm diameter



可选附件

Optional Accessories



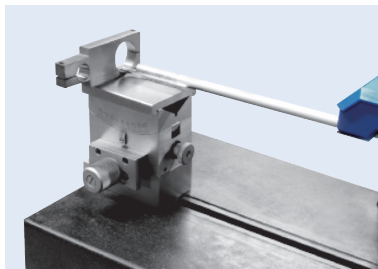
小型精调平台
Small-sized instrument stand

小型精调平台是为便携式表面粗糙度测量仪配置的工作平台。其理石平台上有 T 型槽，可以配置各种工作台，对工件位置进行精密调整。粗糙度仪的驱动箱可以安装在立柱上，根据工件位置进行俯仰调整。

- 工作台载物面范围：
300mm×250mm
- 立柱工作高度：220mm
- 适用产品：T1000 系列便携式粗糙度测量仪。
- 订货号：30703

The small-sized instrument stand offers a base plate for the portable surface roughness tester. Various measuring table can be fitted with the T-slot in the granite base plate for precise positioning of the workpiece. In addition, the traverse unit can be mounted on the column and can be adjusted according to the measuring angle of the workpiece.

- Loading area of instrument base :
300mm×250mm
- Vertical height adjustment : 220mm
- Application : T1000 series portable roughness tester .
- Order No : 30703



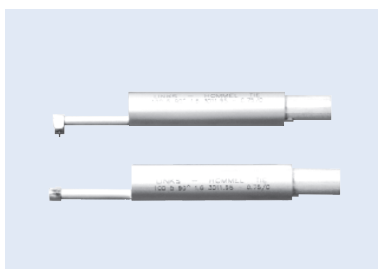
加长杆
Pick-up extension

加长杆是为表面粗糙度测量仪设计的，它可以将粗糙度仪的传感器长度增加 100mm 或 200mm，以测量内孔等驱动箱无法进入的内表面粗糙度。

- 适用产品：T1000 系列便携式粗糙度测量仪。
- 订货号：23002

The Specially designed pick-up extension can be extended to 100mm or 200mm to facilitate deep bore surface measurement .

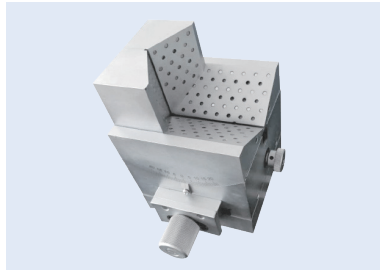
- Application : T1000 series portable roughness tester .
- Order No : 23002



T1000 粗糙度传感器
Model T1000 surface roughness pick-up

- 标准传感器：测量平面、圆柱母线等直线方向的粗糙度。
- 圆弧传感器：测量曲率半径 $\geq 3\text{mm}$ 的曲面粗糙度。
- 适用产品：T1000 系列便携式粗糙度测量仪。

- Standard pick-up , for plane and cylinder surface measurement .
- Curved surface pick-up , suitable for checking the curved surface min . 3mm curvature radius .
- Application : T1000 series portable roughness tester .



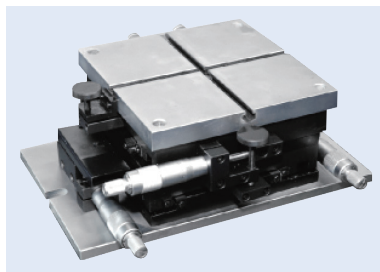
磁力调斜工作台
Magnetic tiltable measuring table

磁力调斜工作台是轮廓测量和粗糙度测量的辅助卡具，有两个互相垂直的工作面，每个工作面上有 120° V 型槽，且有成组的磁钢产生的磁力可以帮助固定被测工件。可以精确固定在理石平台的 T 型槽中。

- 调整范围：Y 方向平移 $\pm 5\text{mm}$ ；绕 Y 轴旋转 $\pm 20^\circ$ 。
- 工作台载物面范围： $116\text{mm} \times 100\text{mm}$
- V 型槽角度： 120°
- 适用产品：所有配理石工作台的轮廓测量仪器和粗糙度测量仪。
- 订货号：30707

A assembly accessory for measured workpiece positioning during surface contour and roughness measurement . Arrows of alnicos on the table-board help to fix the measured workpiece . The measuring table can be fitted with the T-slot in the granite base .

- Adjustment range : $\pm 5\text{mm}$ along Y axis ; inclined by $\pm 20^\circ$ around Y axis .
- Loading area of instrument base : $116\text{mm} \times 100\text{mm}$
- V-groove : 120° included angle
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 30707



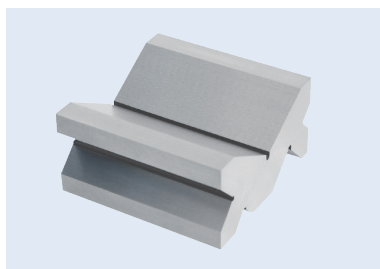
万向工作台
Universal measuring table

万向工作台在轮廓测量中，可以调整承载工作面上的工件位置。可以固定在仪器理石平台的 T 型槽中，载物面上还有两条分别与 T 型槽平行和垂直的定位槽，为工件与传感器提供了精确定位基准。

- 调整范围：
X、Y 方向平移 $\pm 10\text{mm}$ ；
绕 X、Y 轴旋转 3° ；
绕 Z 轴旋转 $\pm 5^\circ$ 。
- 工作台载物面范围： $116\text{mm} \times 160\text{mm}$
- 适用产品：所有配理石工作台的轮廓测量仪器和粗糙度测量仪。
- 订货号：30706

Universal measuring table which can be fitted with the T-slot in the granite base serves as holding fixture and positioning adjustment of workpiece during the profile measurement . The loading worktable having two positioning slots provides precise reference for the workpiece and pick-up .

- Adjustment range :
shifting $\pm 10\text{mm}$ along X or Y axis ;
inclined by 3° around X or Y axis ;
swiveled through $\pm 5^\circ$ around Z axis.
- Loading area of instrument base : $116\text{mm} \times 160\text{mm}$
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 30706



多功能 V 型块
Multifunction Vee-block

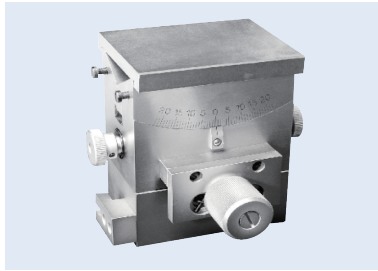
多功能 V 型块在四个工作面上共有五个 V 型槽，可用于轴类工件和圆形工件的定位。

- 可加紧工件直径 (mm) : 3.5-150
- V 型块尺寸 (mm) : $60 \times 60 \times 30$
- V 型槽角度： 90° 、 120°
- 适用产品：所有轮廓测量仪器和粗糙度测量仪。
- 订货号：30705

There are 5 V-shape grooves on 4 working surface , for positioning and fixing workpieces like shafts and circular shape components .

- Diameter range of these workpieces is between (mm) : 3.5-150
- Dimensions (mm) : $60 \times 60 \times 30$
- V-groove angles : 90° 、 120°
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 30705





调斜工作台
Tilttable measuring table

调斜工作台是形状测量和粗糙度测量中调整工件位置的最佳工具。它的调整范围大，体积小，调整方便。工作台可以精确固定在理石平台的T型槽中。

- 调整范围：Y方向平移 $\pm 5\text{mm}$ ；绕Y轴旋转 $\pm 20^\circ$ 。
- 工作台载物面范围： $80\text{mm} \times 65\text{mm}$
- V型槽角度： 120°
- 适用产品：所有配理石工作台轮廓测量仪器和粗糙度测量仪。
- 订货号：30701

With wide adjusting range , compact construction and easy operation , the tilt adjusting table is an ideal accessory for workpiece positioning during the surface profile and roughness measurement . The measuring table can be fitted with the T-slot in the granite base .

- Adjustment range : $\pm 5\text{mm}$ along Y axis ; inclined by $\pm 20^\circ$ around Y axis .
- Loading area of instrument base : $80\text{mm} \times 65\text{mm}$
- V-groove : 120° included angle
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 30701



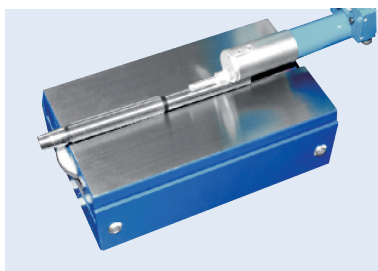
轮廓仪专用底台
Special instrument desk for the surface profil tester

用于承载台式表面轮廓测量仪系列产品，将轮廓仪所有部件根据使用要求合理摆放。台面上有放置减震轮胎的矩形凹槽，下方的储物柜可以用来存放传感器、测量附件等。

- 台面尺寸： $1500\text{mm} \times 660\text{mm}$
- 底台高度： 750mm
- 适用产品：所有台式轮廓仪产品。
- 订货号：23010

The instrument desk allows you to load the various surface profile tester . All components for the tester may be positioned and set up according to the working conditions . The rectangular groove arranged on the instrument desk is designed for vibration isolation in the profile measuring operation . The shelf unit serves to store the pick-ups and measuring accessories .

- Overall dimensions of the desk : $1500\text{mm} \times 660\text{mm}$
- High : 750mm
- Application : complete desk-top surface profile
- Order No : 23010



微调工作台
Precise positioning unit

微调工作台是用来调整承载的工件绕Y轴倾角大小的。

- 调整范围：绕Y轴旋转 3°
- 工作台载物面范围： $114\text{mm} \times 200\text{mm}$
- 适用产品：所有配理石工作台的轮廓测量仪器和粗糙度测量仪。
- 订货号：20604

The precise positioning unit serves as tilt adjustment of the workpiece along Y axis .

- Adjustment range : inclined by 3° around Y axis .
- Loading area of instrument base : $114\text{mm} \times 200\text{mm}$
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 20604



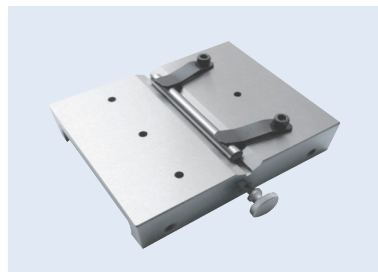
V型工作台
Vee-block

V型工作台是形状测量仪和轮廓测量仪所配备的支撑平台，为工件提供了相对于理石平台T型槽的精确定位。

- 工作台载物面范围：80mm×65mm
- V型槽角度：120°
- 适用产品：所有配理石工作台的轮廓测量仪器和粗糙度测量仪。
- 订货号：30704

Vee-block is a kind of support table fitted with the T-slot in the granite base with very high positioning accuracy .

- Loading area of instrument base : 80mm×65mm
- V-groove : 120° included angle
- Application : surface portable and roughness tester fitted with granite base plate .
- Order No : 30704



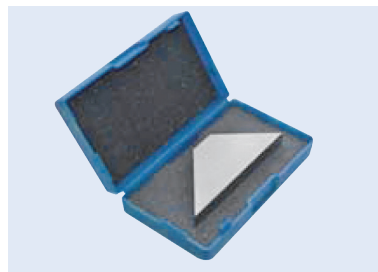
测针校准附件
Stylus calibration accessories

测针校准附件与调斜工作台配合使用，由一个带有V型槽的门型盖板和一个标准圆棒组成的。用于校准形状传感器测针的测针半径。

- 适用产品：
2300A-RC、2300A-C。
- 订货号：20602-4

The calibration accessories need to work with a titable worktable , which with a V-slot , clamping plates and standard cylinder bar . The set is used for calibrating the tip radius of the shape stylus sensor .

- Application :
model 2300A-RC、2300A-C .
- Order No : 20602-4



角度校准器具
Angle calibration gauge set

角度校准器具是一组梯形角度量块，用来校准表面轮廓测量仪的角度测量误差。

- 量块工作角度：60°、70°。
- 适用产品：
2300A-RC、2300A-C。
- 订货号：20602-3

Angle calibration gauge is trapeziform angle gauge , used for calibrating angle measuring error of surface contour testers .

- Effective angle : 60°、70° .
- Application :
model 2300A-RC、2300A-C .
- Order No : 20602-3



标准球校准器具
Standard ball

标准球校准器具由一个标称直径25±2mm的玻璃球和一个球座组成，用来校准表面形状测量仪的圆弧半径测量误差。

- 标准球球度最大允许误差：
±0.5μm
- 适用产品：2300A-RC、2300A-C。
- 订货号：20602-2

The master ball calibrator consists a glass ball with nominal diameter 25±2mm and a ball base , which is for calibrating the arc radius measuring error of the surface form tester .

- Roundness MPE : ±0.5μm
- Application :
model 2300A-RC、2300A-C .
- Order No : 20602-2



轮廓量仪产品一览表

单位：mm

测量类型	型号	驱动箱		传感器			立柱垂直有效高度	测量参数
		类型	水平量程行程	类型	最小分辨力	测量范围		
轮廓粗糙度测量仪	2300A-RC	直线光栅	120	光感式 / 电感式	0.05μm / 0.6nm	40mm / 400μm (1200μm)	270/300 (电动)	距离、角度圆弧半径等形位参数、表面粗糙度、波纹度、微小形状
表面轮廓测量仪器	2300A-C	直线光栅	120	光感式	0.05μm	40mm	270 (电动)	距离、角度、圆弧半径等形位参数
表面粗糙度测量仪	2300A-R	直线光栅	120	电感式	0.6nm	400μm (1200μm)	300 (电动)	表面粗糙度、波纹度、微小形状
表面粗糙度测量仪	2205B	编码计数	50	电感式	0.06nm	400μm	280 (手动)	表面粗糙度
便携式表面粗糙度测量仪	2226	时钟采样	15	电感式	5nm	120μm	--	表面粗糙度
便携式表面粗糙度测量仪	T1000C	时钟采样	15	电感式	5nm	100μm	--	表面粗糙度

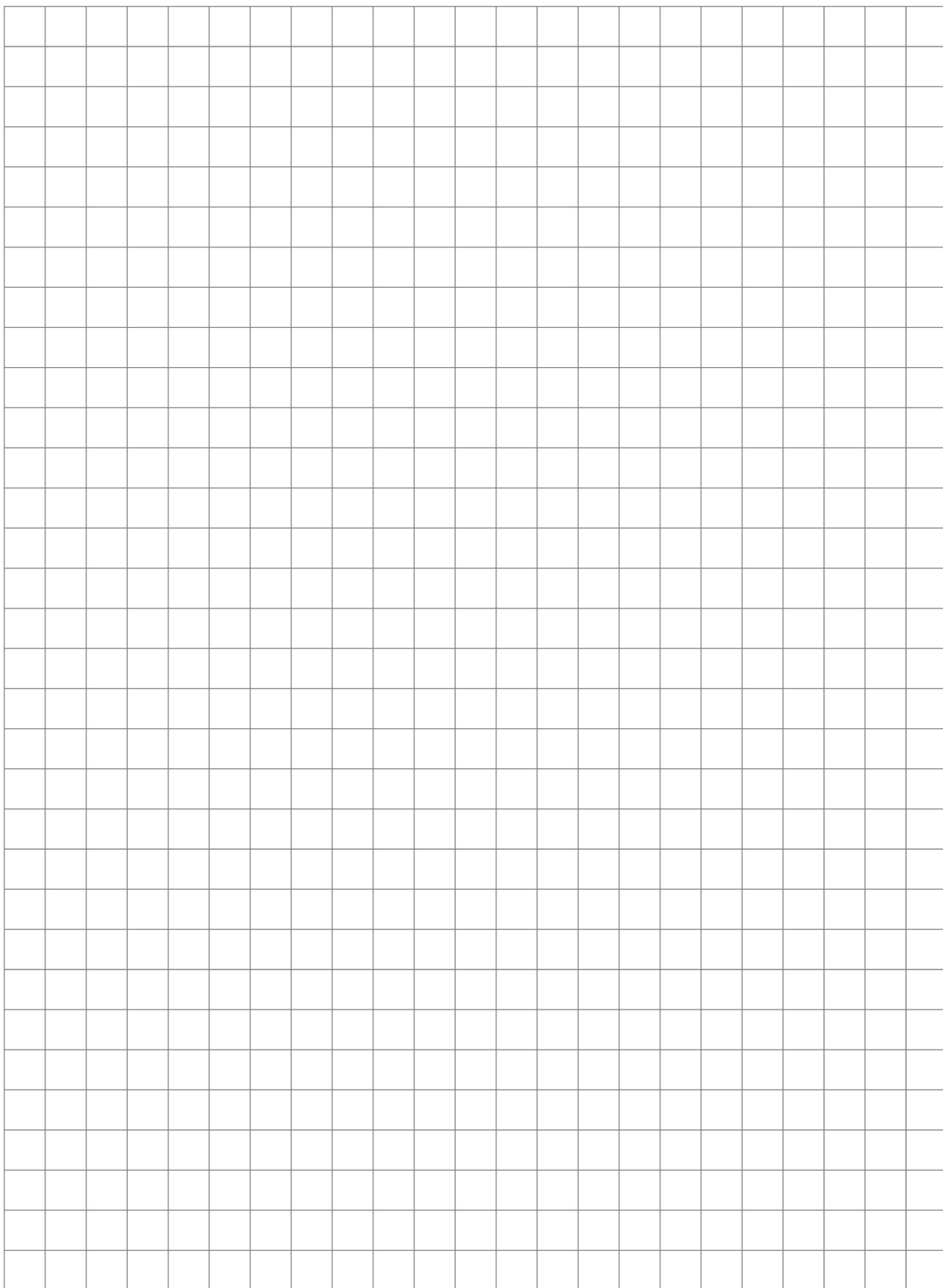


Profile Measuring Instrument Specification Sheet

Unit: mm

Measuring type	Model	Drive		Sensor			Z-axis vertical travel	measuring parameter
		Type	X-axis measuring range	Type	minimum resolution	measuring range		
Surface profile tester	2300A-RC	linear grating	120(200)	photoelectric\ inductive	0.05μm/ 0.6nm	40mm/ 400μm (1200μm)	270/300 (电动)	Form and position parameters such as distance, angle, arc radius, etc. surface roughness,waviness, tiny shape.
Surface contour tester	2300A-C	linear grating	120(200)	photoelectric	0.05μm	40mm	270 (电动)	Form and position parameters such as distance, angle, arc radius
Surface roughness tester	2300A-R	linear grating	120(200)	photoelectric	0.6nm	400μm (1200μm)	300 (电动)	surface roughness、waviness, tiny shape
Surface roughness tester	2205B	coding count	50	inductive	0.06nm	400μm	280 (手动)	surface roughness
Portable surface roughness tester	2226	sampling clock	15	inductive	5nm	120μm	--	surface roughness
Portable surface roughness tester	T1000C	sampling clock	15	inductive	5nm	100μm	--	surface roughness







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