



Portable Hardness Tester

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TIME® 5300

PORTABLE HARDNESS TESTER

Standard Delivery

• Main unit	1
• Impact device type D	1
• Test block HLD	1
• Small support ring	1
• Cleaning brush	1
• Charger	1
• Printing paper	1
• TIME certificate	1
• Warranty card	1
• Instruction manual	1

Optional Accessory

- Special impact devices
- Support rings

Features

- Simple menu, easy and convenient to use
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB, and HS) & conversion of tensile strength
- Screen display showing all the important values and information (including values, mean value(MEAN), numbers of measuring(NO.), date, impact direction, materials tested, hardness values and so on)
- 7 types of optional impact devices, with auto recognition, universal standard D type included
- High accuracy and various material options for testing including Steel and Cast steel, Forged Steel, Cold Work Tool Steel, Stainless Steel, Gray Cast Iron, Nodular Cast Iron, Cast Aluminum Alloys, Brass (Copper-zinc alloys), Bronze (copper-aluminum/copper-tin alloys), Wrought Copper Alloys)
- Measuring direction: any direction 360° even with probe pointing up
- Indication for charge and easy change for rechargeable battery
- Printer included and test values can be printed directly
- Software calibration
- Auto power off



Technical Specification

Measuring range	(170-960)HLD (17.9-69.5)HRC see page 14
Hardness scale	HL, HB, HRB, HRC, HV, HS
Measuring direction	360°
Tolerance	±6HLD(when HLD=760±30) see page 15
Repeatability	6HLD(when HLD=760±30)
Diameter for printer paper	40mm
Width for printer paper	44.5±0.5mm
Power	12V/600mA
Charging time	2-3.5 hour
Humidity	≤90%
Operating temperature	0°C~40°C
Dimensions (mm)	235×90×47
Weight (g)	615

TIME[®]5301

PORTABLE HARDNESS TESTER

Standard Delivery

•Main unit	1
•Impact device type D	1
•Cleaning brush	1
•Small support ring	1
•Test block HLD	1
•Charger	1
•Printing paper	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Optional Accessory

- Special impact devices
- Support rings



Features

- Simple menu, easy and convenient to use
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB and HS) & conversion to tensile strength
- 7 types of optional impact devices, with auto recognition. Universal standard D type included
- Matrix LCD display with back-light showing all the important values and information
- Memory of 48-350 groups of data
- Upper /lower limits pre-setting and sound alarm
- RS232 connector meets more needs like storage and further analysis
- Indication for charge and easy change for rechargeable battery
- Printer included and test values can be printed directly

Technical Specification

Measuring range	(170-960) HLD (17.9-69.5) HRC see page 14
Hardness scale	HL, HB, HRB, HRC, HV, HS
Measuring direction	360°
Tolerance	±6HLD (when HLD=760±30) see page 15
Repeatability	6HLD (when HLD=760±30)
Diameter for printer paper	40 mm
Width for printer paper	44.5±0.5 mm
Power	12V/600mA
Charging time	2-3.5 hour
Humidity	≤90%
Operating temperature	0°C-40°C
Dimensions (mm)	234x88x46
Weight (g)	600

TIME®5303

PORTABLE HARDNESS TESTER

Standard Delivery

•Main unit	1
•Impact device type D	1
•Test block HLD	1
•Charger	1
•Cleaning brush	1
•Table support for main unit	1
•Connecting cable	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Optional Accessory

•Printing paper	1
•Special impact devices	
•Support rings	

Features

- Two hardness testing systems: one for roller hardness testing and the other for standard hardness testing.
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB, HRA and HS)
- 7 types of optional impact devices, with auto recognition. Universal standard impact device D included.
- Matrix LCD display with back-light showing all the important values and information
- Memory of 48-350 groups of data
- Upper /lower limits setting and sound alarm
- RS232 interface for further management
- Software calibration
- Connected to printer and test values can be printed directly
- Conform to JB/T 9378-2001, Q/HD SDF006-2003 Standards.



Technical Specification

Measuring range	(30-110) HSD HLD see page 14
Hardness scale	HL,HB, HRB, HRC, HV, HS
Measuring direction	360°
Tolerance	±6HLD (when HLD=760±30) see page 15
Repeatability	6HLD (when HLD=760±30) see page 15
Power	12V/600mA
Charging time	2 hours (with over-charged protection)
Operating temperature	0°C-40°C
Dimensions (mm)	270x86x47
Weight (g)	530 (including main unit and printer)
Interface	RS 232



Features

- Advanced micro-electronic technology for wide range metal hardness test
- Simple menu, easy and convenient to use
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB and HS) & conversion to tensile strength
- 7 types of optional impact devices, with auto recognition. Universal standard impact device D included.
- 2.8 inches TFT LCD screen, 240 X 320 dot Matrix, 262K color display with adjustable back-light showing all the important values and information
- Memory of 1000 groups of data
- Upper / lower limits setting and sound alarm
- Transfer to PC via USB in Word & Excel format , with Powerful PC Software included
- Indication for charge and life-long rechargeable Li battery without memory
- Removable printer optional and test values can be printed directly
- Built-in conversion table and HB value can be read directly if D/DC impact device installed

TIME® 5310

PORTABLE HARDNESS TESTER

Standard Delivery

- Main unit
- Impact device type D
- Test block HLD
- Small support ring
- Charger
- Cleaning brush
- Thermal printer paper
- TIME certificate
- Warranty card
- Instruction manual

Optional Accessory

- Impact device: DC, D+15, C, G, DL
- Support rings
- Dataview

Technical Specification

Measuring range	(170-960)HLD see page 14
Tolerance and repeatability	tolerance: ±6HLD (790±40HLD) repeatability: 6HLD (790±40HLD)
Measuring direction	360°
Hardness scale	HL, HB, HRB, HRC, HV, HS
Display	2.8 inch TFT LCD screen, 240 x 320 dot matrix, 262K color display
Data storage	1000 groups of data
Upper and lower limits setting	(170-960)HLD
Working voltage	3.7V
Charging time	6 hours
Power	12V/500mA
Continuous working time	20 hours
Interface	USB2.0

TIME[®] 5330

PORTABLE HARDNESS TESTER

Features

- Simple menu with instruction, easy and convenient to use
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB and HS) & conversion to tensile strength
- 7 types of optional impact devices, with auto recognition. Universal standard impact device D included.
- 4.3 inches TFT LCD screen, 480 X 272 dot Matrix, 24 bits true color display
- Memory of 2000 groups of data
- Upper / lower limits setting and sound alarm
- Transfer to PC via USB or RS232 in Word & Excel format , with Powerful PC Software included
- Indication for charge and life-long rechargeable battery without memory
- Removable printer optional and test values can be printed directly
- Built-in conversion table and HB value can be read directly if D/DC impact devices installed



Technical Specification

Measuring range	(170~960)HLD see page 14
Measuring direction	360°
Hardness scales	HL, HB, HRB, HRC, HV, HS
Display	4.3 inch AMOLED screen, 480×272 dot matrix, 24 bits true color display
Data storage	2000 groups
Upper and Lower limits setting	(170~960)HLD
Working voltage	3.7V
Charging time	Approx 6 hours
Power	12V/500mA
Continuous working time	Approx 12 hours
Interface	RS232 and USB

TIME® 5350

PORTABLE HARDNESS TESTER

Standard Delivery

- Main unit
- Impact device type D
- Test block HLD
- Small support ring
- Charger
- Cleaning brush
- MicroSD card
- Communication cable
- TIME certificate
- Warranty card
- Instruction manual

Features

- Simple menu with instruction, easy and convenient to use
- Conversion of common hardness scales (HL, HV, HB, HRC, HRB, and HS) & conversion to tensile strength
- 7 types of optional impact devices, with auto recognition. Universal standard impact device D included.
- 3.5 inches 320 X 480 dot Matrix LCD screen shows sufficient info with clear image; three different levels of backlight ,meet different situation needs
- Memory of 200 groups of data , including the information of the one-time value, average value, date, impact direction, measuring times, material and hardness scales.
- Upper /lower limits setting and sound alarm
- Transfer to PC via USB or RS232 in Word & Excel format , with Powerful PC Software included
- Maximum 32GB capacity MicroSD card can be used to store measured
- Removable printer optional and test values can be printed directly
- Built-in conversion table and HB value can be read directly if D/DC impact devices installed
- Software calibration function



Technical Specification

Measuring range	(170-960)HLD see page 14
Hardness scale	HL, HB, HRB, HRC, HV, HS
Measuring direction	360°
Tolerance	±6HLD(when HLD=760) see page 15
Repeatability	6HLD(when HLD=760)
Power	5V/500mA
Charging time	5 hour
Humidity	≤90%
Operating temperature	0°C~40°C
Dimensions (mm)	149×82×23
Weight (g)	200

TIME[®] 5100/5102/5104

PORTABLE HARDNESS TESTER

Optional Accessory

- Support rings
- Dataview software

Standard Delivery

- Main unit 1
- Test block HLD 1
- USB connecting cable 1
- Cleaning brush 1
- Battery AAA 1.5V 2
- TIME certificate 1
- Warranty card 1
- Instruction manual 1

Features

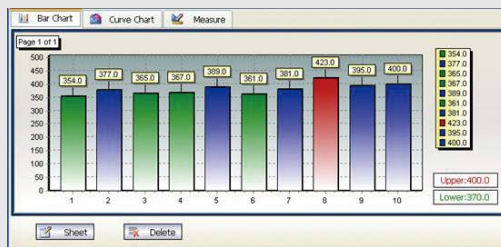
- Light Mini Unit with simple menu, easy and convenient to use
- Conversion of hardness scales(HL, HV, HB, HRC, HRB and HS)
- USB interface to connect the PC, assisted by Software Dataview TH51X (especially for TH51X series Hardness Test) with both online measurement and offline data analysis mode: curve chart, data sheet, setting of tolerance limit and data report are available.
- Connected to Printer by RS 232 and test values can be printed directly
- Measuring direction: any direction 360°
- Automatic identification of impact test direction
- Memory of 270 data in 9 group
- Backlight for convenience in darkness
- Upper / lower limits setting
- AAA 1.5V battery, whose capacity shown in display
- Auto power off
- TIME[®]5100: integrated with D impact device for the majority of hardness testing requirements
- TIME[®]5102: integrated with C impact device for hardness testing on thin, light and surface hardened components
- TIME[®]5104: integrated with DL impact device for hardness testing of deep grooves and tooth surface



Technical Specification

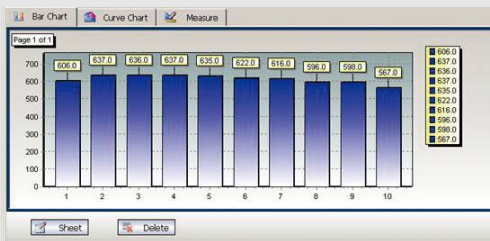
Model	TIME [®] 5100	TIME [®] 5102	TIME [®] 5104
Impact device	D integrated	C integrated	DL integrated
Hardness scales	HLD, HB, HRC, HRB, HV, HS	HLC, HB, HRC, HRB, HV, HS	HLDL, HB, HRC, HRB, HV, HS
Accuracy	±6HLD(760 ±30HLD)	±12HLC	±12HLDL
Memory	270 average readings in 9 group files		
Output	RS 232 to printer	RS232 to printer	RS232 to printer
Min. surface roughness of work piece	1.6μm (Ra)	0.4μm (Ra)	1.6μm (Ra)
Max. work piece hardness	960HLD	960HLC	950HLDL
Min. radius of work piece (convex/concave)	Rmin = 50mm (with support ring Rmin=10mm)	Rmin=11mm (with support ring)	Rmin = 10mm (with support ring Rmin=10mm)
Min. work piece weight	2~5kg on stable support 0.05~2kg with compact coupling	0.5~1.5kg on stable support 0.02~0.5kg with compact coupling	2~5kg on stable support 0.05~2kg with compact coupling
Min. work piece thickness coupled	5mm	1mm	5mm
Min. thickness of hardened layers	0.8mm	0.2mm	0.8mm
Indentation depth	Impact devices data	Impact devices data	Impact devices data
Continuous working time	8h (without backlight)		
Power	AAA 1.5V batteries		
Operating temperature	0~40°C	0~40°C	0~40°C
Dimensions (mm)	155×55×25	160×60×25	215×60×25
Weight (g)	180	180	180

Online measurement



Data analysis

Bar chart



Curve chart



Data sheet

ID	Value	Tolerance Limit
1	644.0	
2	647.0	
3	635.0	
4	643.0	
5	639.0	
6	636.0	
7	640.0	
8	643.0	
9	632.0	
10	635.0	

Setting of tolerance limit

Dataview TH51X is special software for TH51X series Hardness Tester. The data stored in the Hardness Tester TH51X series can be transferred to the PC for further analysis with Dataview TH51X. It has online measurement mode and offline analysis mode, data analysis, graphics display and print output functions are all available.

Data report

ID	Date	Time	Value	Scale	Model	Material	Direction	Average
1	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
2	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
3	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
4	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
5	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
6	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
7	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
8	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
9	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3
10	2009-02-01	15:21.0	640.0	DL	DL	Steel and Cast Steel	Vertical Down	3

TIME[®] 5100/5102/5104

SOFTWARE



Features

- A totally new appearance with industrial style.
- Excellent portability for testing anywhere anytime.
- OLED display that can read measuring values clearly in dark environment.
- Real-time measurement data can be printed out via Bluetooth wireless printer
- The instrument parameters can be set through the mobile terminal APP.
- Data storage of 100 groups (only can be read by mobile phone APP)
- Software calibration
- Rechargeable lithium battery, with charging indicator.

TIME®510D **NEW**

PORTABLE HARDNESS TESTER

Standard Delivery

- | | |
|---------------------|---|
| •Main unit | 1 |
| •Test block HLD | 1 |
| •Charger | 1 |
| •Cleaning brush | 1 |
| •Lanyard | 1 |
| •Support ring | 1 |
| •TIME certificate | 1 |
| •Warranty card | 1 |
| •Instruction manual | 1 |

Optional Accessory

- Support rings
- APP
- Bluetooth printer



APP Download



Technical Specification

Standard impact device	D integrated
Hardness scales	HL,HB,HRA,HRB,HRC,HV,HS
Measuring range	(170~960)HLD
Accuracy	6HLD
Surface roughness of workpieces	≤1.6μm(Ra)
Max. workpiece hardness	940HV
Min.thickness of hardened layers	0.8mm
Charging time	2h
Continuous working time	8h
Power supply	6V/500mA
Operating temperature	0~40℃
Dimension (mm)	145×35×30
Weight (g)	130



Features

- Impact device G for Solid components. E.g. heavy castings and forgings.
- Two work modes: either in Individual mode, or in System mode
- Testing materials, hardness scale, testing direction and measurement times can be chosen
- Conversion among 3 hardness scales: HLG, HB, HRB
- Automatic identification of impact test direction
- Review, delete current measured data & calculate the average values automatically
- Memory of 200 average values
- Transfer to PC via USB in Word & Excel format, with Powerful PC Software included
- Battery indicator with auto power off in low battery or 2 minutes without working

TIME®5106

PORTABLE HARDNESS TESTER

Standard Delivery

• Main unit	1	• Cleaning brush	1
• Test block G	1	• TIME certificate	1
• Mini USB cable	1	• Warranty card	1
• Charger	1	• Instruction manual	1

Conversion Table

Material	Hardness scale	Range
Steel and cast steel	HB	90~646
	HRB	47.7~99.9
Grey cast iron	HB	92~326
Nodular cast iron	HB	127~364
Cast aluminum alloys	HB	32~168
	HRB	23.8~85.5

Technical Specification

Impact device	G type
Impact energy	90mJ
Work mode	Used single or system mode
Display	OLED screen, 128x64 dot matrix, brightness adjustable
Measuring range	(200~750)HLG see page 14
Accuracy	±12HLG
Repeatability	12HLG
Measuring direction	360°
Hardness scales	HLG, HB, HRB
Memory	200 average value
Interface	USB
Data output	Transfer data to PC
Operating voltage	3.3V
Operating temperature	0~40°C
Humidity	≤90%
Dimensions (mm)	254 × 50 × 40
Weight (g)	310

Features

- The smart probe can test Leeb hardness by connecting to a mobile phone (currently limited to Android), and the two are connected wirelessly via Bluetooth
- The hardness value measured by the smart probe can be wirelessly transmitted to the smart phone in real time through the APP "TIME Smart Test"
- The smart probe has good portability, small size, with a lanyard.
- The smart probe uses a built-in rechargeable lithium battery, which can be charged wirelessly.
- The dustproof and waterproof grade of the smart probe reaches IP54, which can adapt to the harsh environment.
- Automatically identify the impact directions.
- The upper and lower limits of the hardness value can be set in advance, and alarm when out of the limits, which is convenient for batch test.
- With self-define material function, users can generate exclusive hardness conversion table through comparison test.
- Measurement records can add multiple types of additional information such as pictures, videos, and positioning.
- It can realize rich post-data processing, such as cloud storage, customized work sheets, real-time data sharing, report generation, etc.
- With automatic shutdown function, and the duration of automatic shutdown can be adjusted or closed.
- The software of the smart probe can be upgraded remotely.
- Smart phones can be connected to the TIME Internet of Things platform to achieve richer functions.

Optional Accessory

- Smart phone
- Leeb test block (high value)

TIME[®]5370 **NEW**
SMART HARDNESS TESTER



Standard Delivery

- | | |
|---------------------|---|
| •Smart probe | 1 |
| •Support ring | 1 |
| •Cleaning brush | 1 |
| •Wireless charger | 1 |
| •Lanyard | 1 |
| •TIME certificate | 1 |
| •Warranty card | 1 |
| •Instruction manual | 1 |

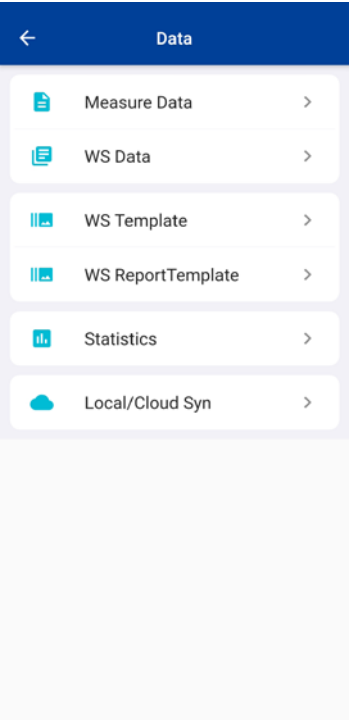
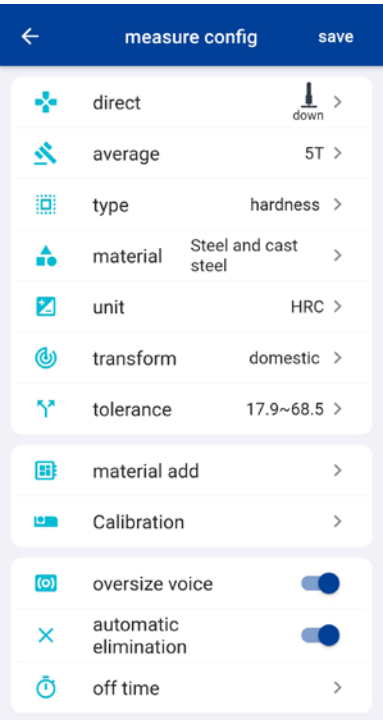
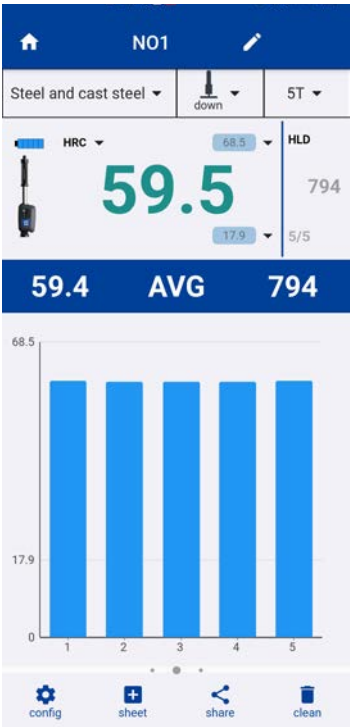
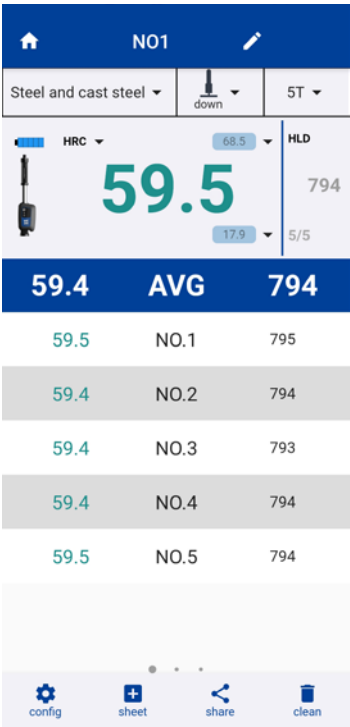
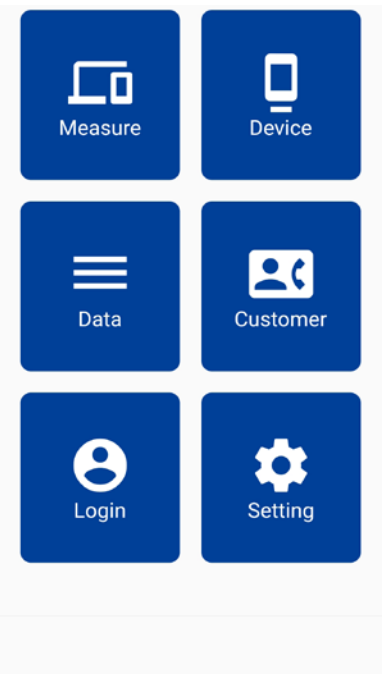
Technical Specification

Measuring range	(170-960)HLD see page 14
Hardness scale	HL, HB, HRB, HRC, HRA, HV, HS
Measuring direction	360°
Tolerance	±6HLD(when HLD=760±30) see page 15
Repeatability	6HLD(when HLD=760±30)
Interface	Bluetooth 4.2
Continuous working time	8 hours
Power supply	5V/1A
Humidity	≤90%
Operating temperature	0°C~40°C
Dimensions (mm)	158×40×25
Weight (g)	85

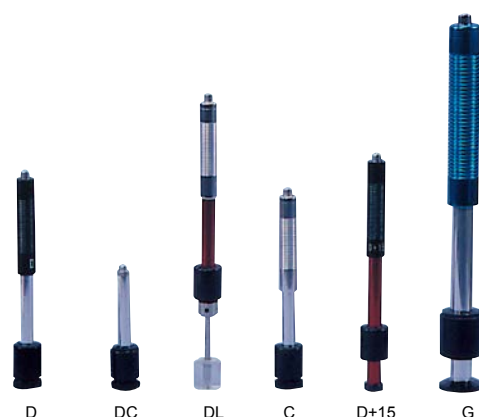
TIME Smart Test APP



QR code
for download



Impact Devices for Portable Hardness Tester



Measuring range of TIME Leeb hardness tester

Material	Hardness scale	Impact device					
		D/DC	D+15	C	G	E (imported)	DL
Steel and cast steel	HRC	17.9~68.5	19.3~67.9	20.0~69.5		22.4~70.7	20.6~68.2
	HRB	59.6~99.6			47.7~99.9		37.0~99.9
	HRA	59.1~85.8				61.7~88.0	
	HB	127~651	80~638	80~683	90~646	83~663	81~646
	HV	83~976	80~937	80~996		84~1042	80~950
	HS	32.2~99.5	33.3~99.3	31.8~102.1		35.8~102.6	30.6~96.8
Steel	HB	143~650					
CWT. steel	HRC	20.4~67.1	19.8~68.2	20.7~68.2		22.6~70.2	
	HV	80~898	80~935	100~941		82~1009	
Stainless steel	HRB	46.5~101.7					
	HB	85~655					
	HV	85~802					
GC. iron	HRC						
	HB	93~334			92~326		
	HV						
NC. iron	HRC						
	HB	131~387			127~364		
	HV						
C. Alum	HB	19~164		23~210	32~168		
	HRB	23.8~84.6		22.7~85.0	23.8~85.5		
Brass	HB	40~173					
	HRB	13.5~95.3					
Bronze	HB	60~290					
Copper	HB	45~315					

Tolerance and repeatability

No.	impact device	Hardness value of Leeb standard hardness block	Accuracy of displayed value	Repeatability of displayed value
1	D	790±40HLD 530±40HLD	±6 HLD ±10 HLD	6 HLD 10 HLD
2	DC	790±30HLDC 530±40HLDC	±6 HLDC ±10 HLDC	6 HLDC 10 HLDC
3	DL	894±40HLDL 736±40HLDL	±12 HLDL	12 HLDL
4	D+15	795±40HLD+15 544±40HLD+15	±12 HLD+15	12 HLD+15
5	G	590±40HLG 500±40HLG	±12 HLG	12 HLG
6	E	755±40HLE 508±40HLE	±12 HLE	12 HLE
7	C	851±40HLC 590±40HLC	±12 HLC	12 HLC

Technical specification

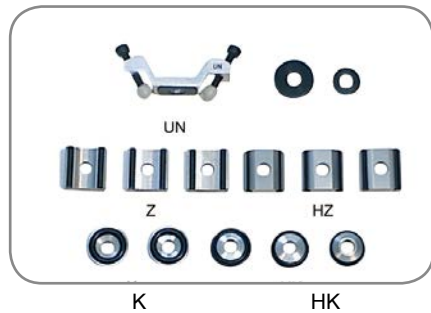
Types of impact device	DC(D)/DL	D+15	C	G	E(imported)
Impact energy Mass of impact body	11mJ 5.5g/7.2g	11mJ 7.8g	2.7mJ 3.0g	90mJ 20.0g	11mJ 5.5g
Test tip hardness Diameter of test tip Material of test tip	1600HV 3mm Tungsten carbide	1600HV 3mm Tungsten carbide	1600HV 3mm Tungsten carbide	1600HV 5mm Tungsten carbide	5000HV 3mm Diamond
Impact device diameter Impact device length Impact device weight	20mm 86(147)/ 75mm 50g	20mm 162mm 80g	20mm 141mm 75g	30mm 254mm 250g	20mm 155mm 80g
Max. hardness of sample	940HV	940HV	1000HV	650HB	1200HV
Roughness of sample surface:	1.6μm	1.6μm	0.4μm	6.3μm	1.6μm
Minimum weight of sample: Measure directly Need support firmly Need coupling tightly	>5kg 2~5kg 0.05~2kg	>5kg 2~5kg 0.05~2kg	>1.5kg 0.5~1.5kg 0.02~0.5kg	>15kg 5~15kg 0.5~5kg	>5kg 2~5kg 0.05~2kg
Min. thickness of sample Coupling tightly Min. depth of layer thickness for surface	5mm ≥0.8mm	5mm ≥0.8mm	1mm ≥0.2mm	10mm ≥1.2mm	5mm ≥0.8mm

Size of tip indentation

Hardness 300HV	Indentation diameter	0.54mm	0.54mm	0.38mm	1.03mm	0.54mm
	Depth of indentation	24μm	24μm	12μm	53μm	24μm
Hardness 600HV	Indentation diameter	0.54mm	0.54mm	0.32mm	0.90mm	0.54mm
	Depth of indentation	17μm	17μm	8μm	41μm	17μm
Hardness 800HV	Indentation diameter	0.35mm	0.35mm	0.35mm	—	0.35mm
	Depth of indentation	10μm	10μm	7μm	—	10μm
	D: General test. DC : Testing hole or inner of cylinder. DL : Test slender narrow groove or hole.		D+15 : Test groove or reentrant surface.	C : Test small, light, thin parts and surface of hardened layer.	G : Test large, thick, heavy and rough surface cast steel.	E : Test super high hardness Material.

Optional Support Rings

Function: they are used for tested surface whose curvature radius is less than 30mm (D, DC, D+15, C,E Impact devices) or less than 50mm (G impact device) .



Support Rings



No.	Type	Sketch of non-conventional supporting ring	Remarks
1	Z10-15		For testing cylindrical outside surface R10~R15
2	Z14.5-30		For testing cylindrical outside surface R14.5~R30
3	Z25-50		For testing cylindrical outside surface R25~R50
4	HZ11-13		For testing cylindrical inside surface R11~R13
5	HZ12.5-17		For testing cylindrical inside surface R12.5~R17
6	HZ16.5-30		For testing cylindrical inside surface R16.5~R30
7	K10-15		For testing spherical outside surface SR10~SR15
8	K14.5-30		For testing spherical outside surface SR14.5~SR30
9	HK11-13		For testing spherical inside surface SR11~SR13
10	HK12.5-17		For testing spherical inside surface SR12.5~SR17
11	HK16.5-30		For testing spherical inside surface SR16.5~SR30
12	UN		For testing cylindrical outside surface, radius adjustable R10~∞



Features

- Nondestructive hardness tester for testing hardened layer and thin workpieces
- 3.5-inch color LCD screen
- It indicates the battery status and alarms in low battery
- Conversion of common hardness sales (HV, HB, HRC)
- Hardness value calibration and delete calibration
- Select the tested material, mainly steel and cast steel. After calibration with the standard test block, it can measure alloy tool steel, special cast iron and non-ferrous metals
- Large memory: built-in 8G SD card.
- Free measurement in all directions, no compensation is needed.
- It can display the maximum value, minimum value, average value, standard deviation, measurement times, previous measurement values, etc.
- Upper/lower limits setting and alarm when out of the limits
- Rechargeable lithium ion battery, continuous working time is more than 30 hours
- Portable stand to enhance the measurement accuracy.

TIME® 5630 **NEW**

ULTRASONIC HARDNESS TESTER

Applications

It can measure strip/plate workpiece, mold hardened layer, blade hardened layer, tooth surface hardened layer, flange edge, wheel, turbine rotor, thin plate, shaft and pipe, container, knife edge, welding part, etc.

Standard Delivery

• Main unit	1
• 10N manual probe	1
• Standard test block	1
• V-shape base	1
• Probe cable	1
• Charger	1
• TIME certificate	1
• Warranty card	1
• Instruction manual	1

Technical Specification

Measuring range	80~1042HV; 100-450HB; 20-70HRC
Loading force	10N
Measuring accuracy	±4%(<500HV)
	±5%(500HV~800HV)
	±6%(>800HV)
Repeatability	8%(<250HV)
	6%(≥250HV)
Indenter	vickers diamond indenter
Measuring direction	Support 360°
Hardness scale	HV, HB, HRC
Dimensions (mm)	170x75x40
Weight (g)	500



Features

TIME®A531 operation stand is one of the important accessories for TIME®5630 ultrasonic hardness tester. It can easily adjust the height of the ultrasonic hardness tester probe to adapt to different sizes of tested workpieces. When the ultrasonic hardness tester is operated by hand, it has higher requirements for the operator, and it is necessary to master the correct operation method to obtain the accurate measurement value. The use of this operation stand can avoid measurement errors caused by human factors and greatly improve the stability of the measured value of the ultrasonic hardness tester. Therefore, it is advised to use the ultrasonic hardness tester with this portable stand.

TIME®A531 **NEW**
OPERATION STAND

Standard Delivery

●Operation stand	1
●Clamping sleeve	1

Technical Specification

Lifting height (mm)	180
Dimensions (mm)	300x200x415
Weight (kg)	9.4



Shore Hardness Tester

B1	Shore Hardness Tester TIME [®] 543X Series	P20
B2	Operation Stand TIME [®] A52X	P21

TIME® 543X Series

SHORE HARDNESS TESTER

Optional Accessory

- Communication cable
- Operation stand (except TIME5433)
- Software

Standard deliveries

- Main unit 1
- Test block 1
- Power adapter 1
- Operation stand for TIME5433 1
- TIME certificate 1
- Warranty card 1
- Instruction manual 1



TIME® 5430



TIME® 5431



TIME® 5432



TIME® 5432C



TIME® 5433

Features

- TIME® 5430 Shore A hardness tester for testing the hardness of soft rubber, plastics and other elastomeric materials
- TIME® 5431 Shore D hardness tester for testing the hardness of hard plastics and rubbers.
- TIME® 5432 Shore AO hardness tester is mainly used to test soft materials like low hardness rubber and sponge.
- TIME® 5432C hardness tester for testing microporous materials for shoes made of rubber and plastic.
- TIME® 5433 Shore AM hardness tester is designed to test thin samples such as vulcanized rubber and plastic products.
- It adopts LVDT displacement sensor, which is accurate and can work in harsh environment
- The OLED screen clearly shows the hardness value. Menu operation.
- Automatic Zero point calibration.
- Three work modes to meet varied testing requirements: real-time, peak-value-lock and timing-lock.
- In peak-value-lock mode, the instrument can automatically lock the peak hardness value.
- In timing-lock mode, set the timing from 1 to 60 seconds. It automatically starts timing and locks the measured value.
- In the lock modes, the upper and lower limits of the measured value can be preset, and a prompt is displayed when out of the limit, which is convenient for batch detection. It can also calculate the average value and automatically removing gross errors.
- Store 200 average lock values.
- Optional software is offered to transfer the test data to PC via USB in the format of Microsoft Word or Excel.

Technical Specification

Model	TIME® 5430 (hardness < 20HD)	TIME® 5431 (hardness > 90HA)	TIME® 5432 (hardness < 20HA)	TIME® 5432C	TIME® 5433 (thickness: < 6mm)
Hardness scale	Shore A	Shore D	Shore AO	Asker-c	Shore AM
Data output	USB				
Measuring range	0~100HA	0~100HD	0~100HAO	0~100Hc	0~100HAM
Tolerance	±1HA(20~90)	±1HD(20~90)	±1HAO(20~90)	±1Hc(20~90)	±1HAM(20~90)
Display resolution	0.1HA	0.1HD	0.1HAO	0.1Hc	0.1HAM
Power supply	Built in rechargeable battery				
Operating temperature	0~40°C				
Continuous working time	24 hours				
Dimensions (mm)	173×56 ×42	173×56 ×42	173×56 ×42	168×56 ×42	173×56 ×42
Weight (g)	200	200	200	249	200



Features

- TIME®A521 for TIME5430/TIME5432/TIME5432C
- TIME®A522 for TIME5431
- TIME®A523 for TIME5433
- With the operating stand, users can get good measurement accuracy and repetitiveness
- Constant measurement force eliminates the errors caused by artificially applied different forces
- The operation handle evenly applies the force to the sample; adjust the testing height to meet the measurement of different sample thickness

TIME®A52X

OPERATING STAND

Standard Delivery

•Operating stand	1
•Handle	1
•Weight	1
•Connecting rod	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Technical Specification

Model	TIME®A521/TIMEA®522/ TIME®A523
Max. thickness of sample(mm)	80
Max. diameter of working table(mm)	Ø116
The Max. lifting displacement(mm)	24
Max. touch distance between pressure foot and working table(mm)	0.05
Dimensions (mm)	420×200×170
Weight (kg)	TIMEA521: 18 TIMEA522: 22 TIMEA523: 17



Surface Roughness Tester

C1	Surface Roughness Tester TIME®3110	P23
C2	Surface Roughness Tester TIME®3200/3202	P24
C3	Surface Roughness Tester TIME®3221	P27
C4	Surface Roughness Tester TIME®3223	P28
C5	Surface Roughness Tester TIME®3231	P31
C6	Surface Form Tester TIME®3233	P32
C7	Surface Form Tester TIME®3234	P34
C8	TIME®A202/TA630/TA631/TA650	P38

TIME[®]3110

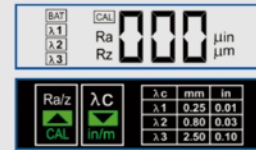
SURFACE ROUGHNESS TESTER

Standard Delivery

•Main unit	1
•Specimen Ra	1
•Charger	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Optional Accessory

- Various Ra specimen with Ra values: 0.1μm, 0.2μm, 0.4μm, 0.8μm, 3.2μm



Features

- Pocket-size unit with economical price, widely used in production lines, workshops and labs.
- Wide measuring range suitable for most materials, and applicable for flat, outer cylinder and sloping surface
- Ragged design device with a long lifetime, while keeping the accurate and reliable data results
- Both Ra and Rz measurement range
- All calculated measurement results shown on its LCD back-lit display hardly after tested
- Indicator and alarm for low battery, out-of-limit values and dysfunction
- Chargeable Li battery and improvement of the circuits function.
- Improvement and Protection for sensor to secure the high accuracy and good stability.
- Conforms to ISO and DIN



Technical Specification

Model	TIME [®] 3110
Roughness parameter	Ra, Rz
Tracing length	6mm
Tracing speed	1.0mm/sec
Cut-off lengths	0.25mm/0.8mm/2.5mm
Evaluation length	1.25mm/4.0mm/5.0mm
Measuring range	Ra: 0.05-10.0μm Rz: 0.1-50μm
Tolerance	±15%
Repeatability	<12%
Filter	RC analogue
Pick-up	Piezoelectric
Radius and angle of the stylus point	Diamond, Radius : 10±2.5μm Angle: 90°(+5°or -10°)
Operating temperature	0~40°C
Humidity	<80%
Storing temperature	-25°C ~ 60°C
Power	3.6V Li-ion battery
Charger	DC6V, 3 hours (charging time)
Dimension (mm)	110×70×24
Weight (g)	160

TIME® 3200/3202

SURFACE ROUGHNESS TESTER

Standard Delivery

•Main unit	1	•Steel support	1
•TS100 standard pickup	1	•Dataview	1
•Roughness test plate Ra	1	•Communication cable	1
•Charger	1	•TIME certificate	1
•Protection nose	1	•Warranty card	1
		•Instruction manual	1

Optional Accessory

- TS110 pickup for curved surface
- TS120 pickup for small holes
- TS130 pickup for deep grooves
- TS140 right-angled pickup
- Measuring platform TIMEA202
- Leveling table TA630/TA631
- Magnetic stand
- Steel adapter (Φ8)
- Steel adapter (L-attachment)

Features

- Over dozen measurement parameters applicable for roughness test of various mechanical manufacturing processes in production lines, workshops and labs.
- High accuracy inductive pickup
- Easy operation manual and large LCD display with backlight.
- Pickup stylus position indicator.
- Transfer to PC via RS232 with advanced PC Software TIMESurf for more analyzing management.
- Connected with printer to print the data and graphs on-site.
- Storage and review function for up to 15 groups data and graphs.
- Rk data and graphic are available.
- Digital filter: RC, PC-RC, Gauss, D-P
- Optional delicate accessories for more accurate results and easier operation eg. measuring platform, steel support and so on
- Conform to ISO standard, compatible with DIN, ANSI and JIS standard.
- Top quality Li-ion rechargeable battery.



Technical Specification

Model	TIME®3200	TIME®3202
Roughness parameters	Ra, Rz, Ry, Rq, Rt, Rp, Rmax, Rv, R3z, RS, RSm, RSk, Rmr,	Ra, Rz, Ry, Rq, Rt, Rp, Rmax, Rv, R3z, RS, RSm, RSk, Rmr, Rpc, Rk, Rpk, Rvk, Mr1, Mr2
Assessed profiles	Roughness profile (R)	
	Primary profile (P)	Primary profile (P)
Measuring system	Metric, imperial	
Display resolution	0.001 µ m	
Data output	RS232	
Pickup measuring range	±20µ m, ±40µ m, ±80µ m	
Cutoff length (L)	0.25mm / 0.8mm / 2.5mm/Auto	
Evaluation length	1~5L (selectable)	1~5L (selectable)
Tracing length	3-7L(selectable)	3-7L(selectable)
Digital filter	RC, PC-RC, Gauss, D-P	
Max. tracing length	17.5mm/0.71inch	
Min. tracing length	1.3mm/0.052inch	
Pick-up	Standard pickup TS100, inductive, diamond stylus radius 5µm, angle of stylus 90°	
Tolerance	≤±10%	
Repeatability	≤6%	
Power	Li-ion battery rechargeable	
Dimensions (mm)	140×52×48	
Weight (g)	440	440

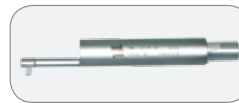
System Diagram



Pickups Optionals



TS100 standard pickup
With skid for roughness test on plane surface, shaft and inner surface of holes with max. depth of 22mm , min diameter 5mm



TS110 pickup for curved surface
Used for roughness testing of curved surface with min curvature radius 3mm , working with measuring platform TIMEA202



TS120 pickup for small holes
Used for roughness testing of small holes with min. 2mm diameter of inner surface, max. depth 9mm



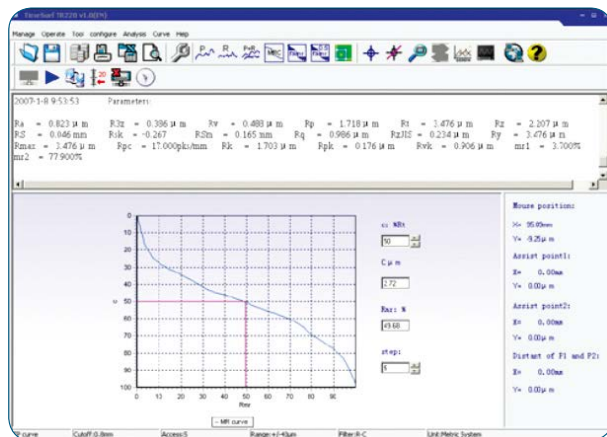
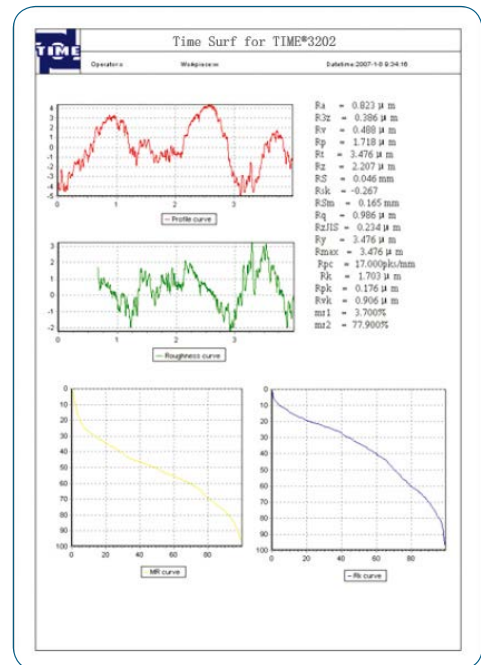
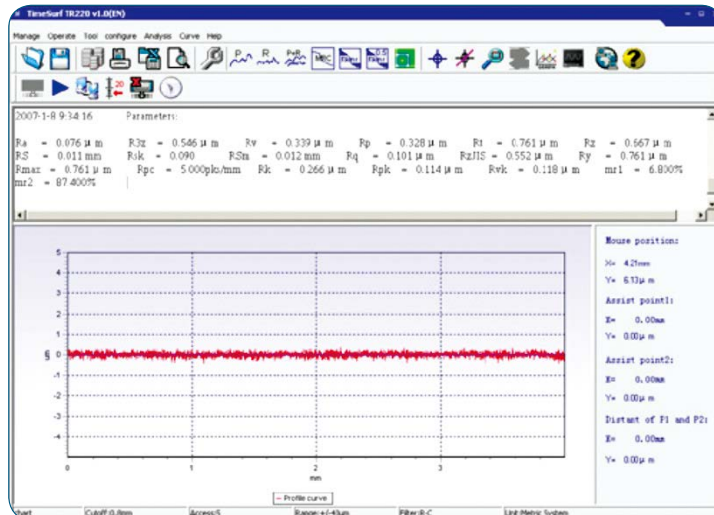
TS130/131 pickup for deep grooves
TS130: Used for roughness testing of deep groove with min. width 2mm , max. depth 3mm or of step with max. height 3mm ,
TS131: Used for roughness testing of deep groove with min. width 3mm , max. depth 10mm or of step with max. height 10mm , working with measuring platform TIMEA202



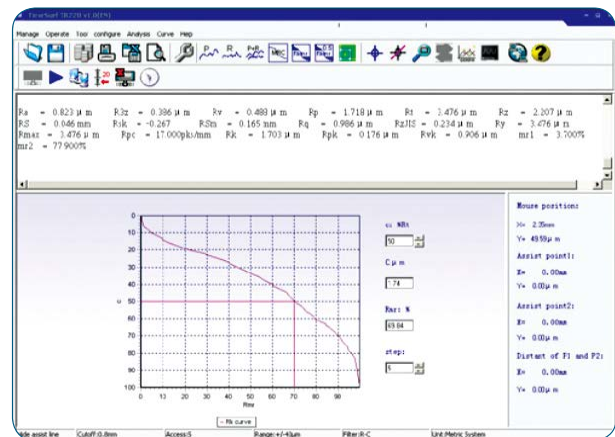
TS140 right-angled pickup
Comprising right-angled pickup and right-angled transmit rod, used for roughness testing of groove and crank with min. width $7.5\text{mm} \sim 20\text{mm}$, and of steps with max. height 2.5mm , working with TIMEA202

TIMESurf for TIME®3200/3202

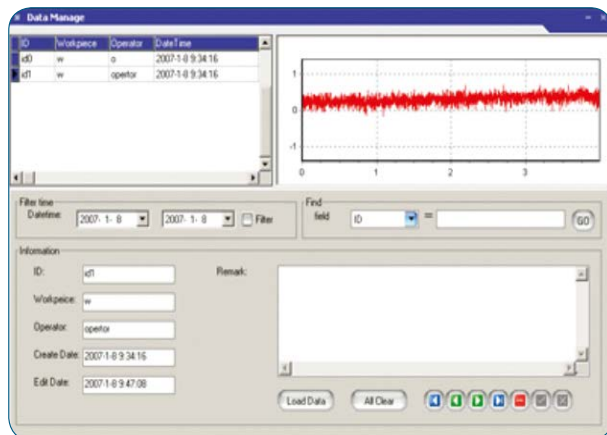
Software works for advanced surface roughness tester TIME®3200/3202 managing, analyzing, printing and searching measured data and graphs



MR curve



RK curve



Database management

The screenshot shows the 'Online' measurement interface. It contains the following input fields:

- Sample interval time: 4 min
- Operator: operator
- Workpiece: workname
- Sample times: 3 times
- State: (empty field)

At the bottom, there are 'Start' and 'Cancel' buttons.

Online measurement



Features

- Separated design, mini driver easy and convenient to use
- Multi measurement parameters: Ra, Rp, Rv, Rt, Rz, Rq, Rsk, Rku, Rc, RPc, RSm, Rmr(c), tp, Rmr, Rpm, Rz1max, RzJIS, Rmax, Htp, Rδc, RΔq, RΔa, Pa, Pp, Pv, Pt, Pz, Pq, Psk, Pku, Pc, PSm, Pmr(c), Pmr, Pz1max, PzJIS, Pδc, PΔq, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2
- Touch screenwith TFT LCD showing all important parameters and graphs
- High accuracy inductive pickup
- Filtering methods of 2RC, GAUSS
- Compatible with standards of ISO1997, ANSI and JIS2001
- Connected to the printer to print all parameters and graphs
- RS232 interface and USB interface meeting more needs
- Auto switch off

TIME®3221

SURFACE ROUGHNESS TESTER

Standard Delivery

•Main unit	1
•Standard pickup	1
•Standard sample	1
•Power adapter	1
•Communication cable	1
•Protection sleeve	1
•Adapter	1
•Magnetic base	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Technical specification

Pickup		
Test principle	Inductance type	
Measurement range	400μm	
Stylus tip radius	5μm/2μm	
Stylus tip material	Diamond	
Measuring force	4mN/0.75 mN	
Stylus tip angle	90°/60°	
Radius of skid curvature	45mm	
Maximum drive range	19mm/0.748inch	
Traversing speed	Measuring: Cut off length = 0.08 mm Vt=0.25 mm/s Cut off length = 0.25 mm Vt=0.25mm/s Cut off length = 0.8 mm Vt=0.5 mm/s Cut off length = 2.5mm Vt=1mm/s Returning V=1mm/s	
Accuracy	Less than or equal to ±10%	
Repeatability	≤6%	
Cut-off length	0.08mm,0.25mm,0.8mm,2.5mm, selectable	
Evaluation length	(1~5)L selectable	
Measuring rang and resolution	Measuring range	Resolution
	Automatic	0.001μm,0.008μm
	±50μm	0.001μm
	±200μm	0.008μm
Power	Built-in Li battery	
Power adapter	Input: 100 V~240VAC,50/60Hz Output: 9V,3A	
Working environment	Temperature: 0℃~40℃ Humidity: < 90% RH	
Dimensions (mm)	155.4×75×53	
Weight (g)	580	



Features

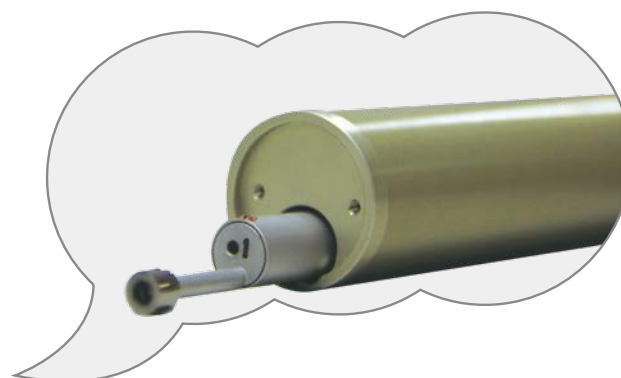
- Separated design, mini driver easy and convenient to use
- Over dozen measurement parameters: Ra, Rp, Rv, Rt, Rz, Rq, Rsk, Rku, Rc, R_{Pc}, R_{Sm}, R_{mr(c)}, tp, R_{mr}, R_{pm}, R_{z1max}, R_{zJIS}, R_{max}, H_{tp}, R_{ōc}, R_{Δq}, R_{Δa}, R_k, R_{pk}, R_{vk}, Mr₁, Mr₂, A₁, A₂, Pa, Pp, Pv, Pt, Pz, Pq, Psk, Pku, Pc, P_{Sm}, P_{mr(c)}, P_{mr}, P_{z1max}, P_{zJIS}, P_{ōc}, P_{Δq}
- Touch screen with TFT LCD showing all important parameters and graphs
- High accuracy inductive pickup
- Filtering methods of 2RC, GAUSS
- Compatible with standards of ISO1997, ANSI and JIS2001
- Connected to the printer to print all parameters and graphs
- RS232 interface and USB interface meeting more needs
- Auto or manual switch off

Optional Accessory

- Connecting cable
- Dataview

TIME®3223

SURFACE ROUGHNESS TESTER



Standard Delivery

•Main unit	1
•Standard pickup	1
•Driver	1
•Charger	1
•Standard sample	1
•Protection sleeve	2
•Feeler lever	4
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

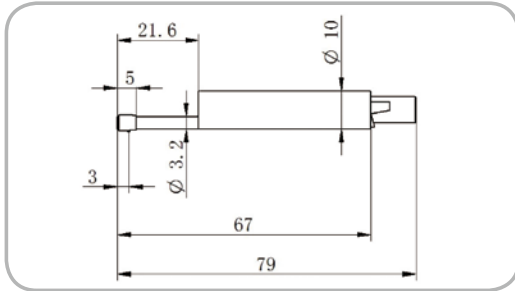
Technical specification

Pick up	Test principle	Inductance type
	Measuring range	400 μm
	Stylus tip radius	5 μm
	Stylus tip material	Diamond
	Measuring force	4 mN
	Stylus tip angle	90°
	Radius of skid curvature	45 mm
	Maximum drive range	19 mm
Measuring range and resolution	Measuring range	Resolution
	±25 μm	0.001 μm
	±200 μm	0.008 μm
Cut-off length	0.08 m, 0.25 mm, 0.8 mm, 2.5 mm	
Evaluation length	1L-5L (selectable)	
Accuracy	±10%	

Pickup for TIME® 322X

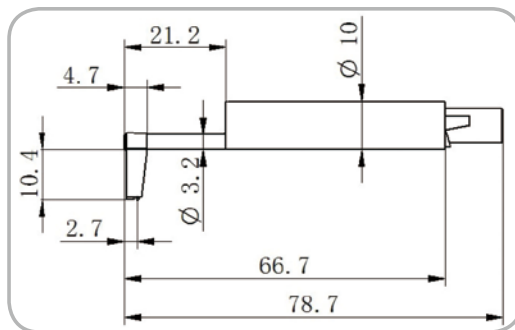
TIME S201 (standard)

Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 400µm



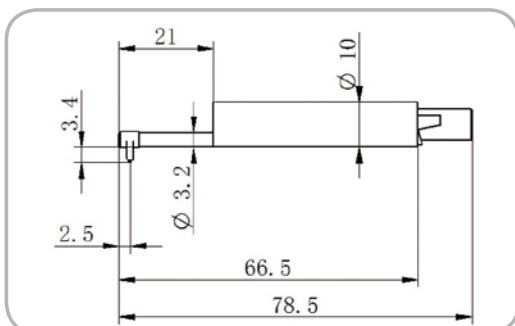
TIME S212 for deep groove

Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 400µm
 Min. width of groove: 2.5mm
 Max. depth of groove: 10mm



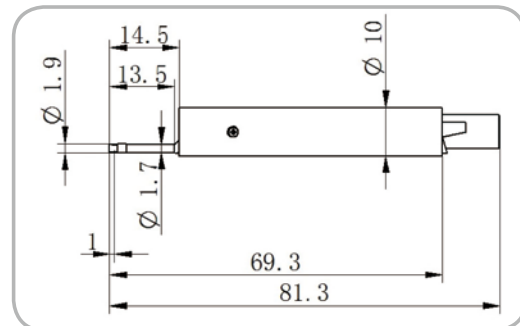
TIME S214 for curved surface

Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 200µm



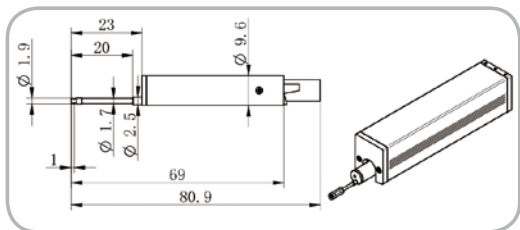
TIME S211 for small hole

Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 100µm
 Min. diameter of hole: ø2mm
 Max. depth of hole: 13.5mm



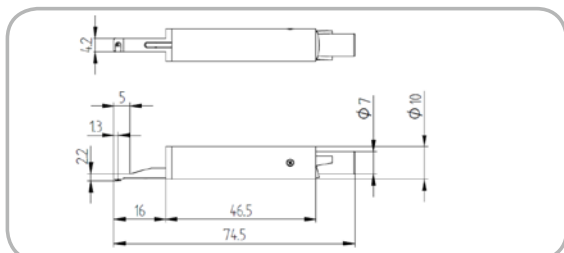
TIME S213 pick up for deep hole

Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 400µm
 Min. width of hole: ø2mm
 Max. depth of hole: 20mm



TIME S215 for tooth surface

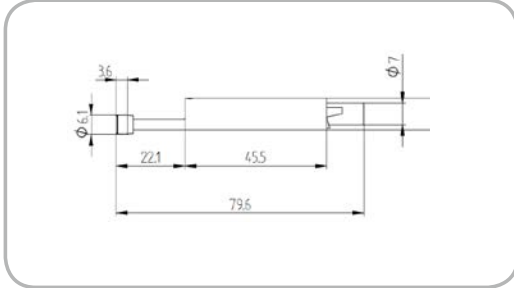
Radius for needle point: 5µm
 Angle for needle: 90°
 Force for needle: 4mN
 Measuring range: 400µm



Pickup for TIME® 322X

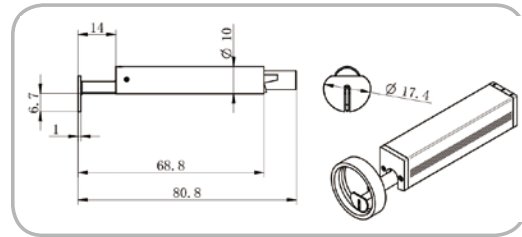
TIME S216 for Pipe

Radius for needle point:	5µm
Angle for needle:	90°
Force for needle:	4mN
Measuring range:	400µm



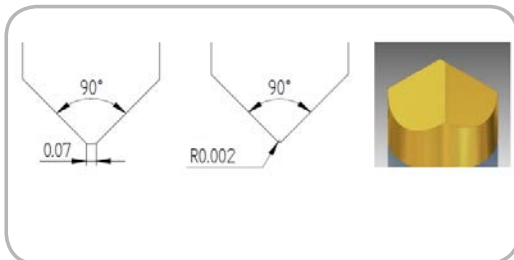
TIME S220 "O" type pickup

Radius for needle point:	5µm
Angle for needle:	90°
Force for needle:	4mN
Measuring range:	200µm
Thickness of lead head:	1mm



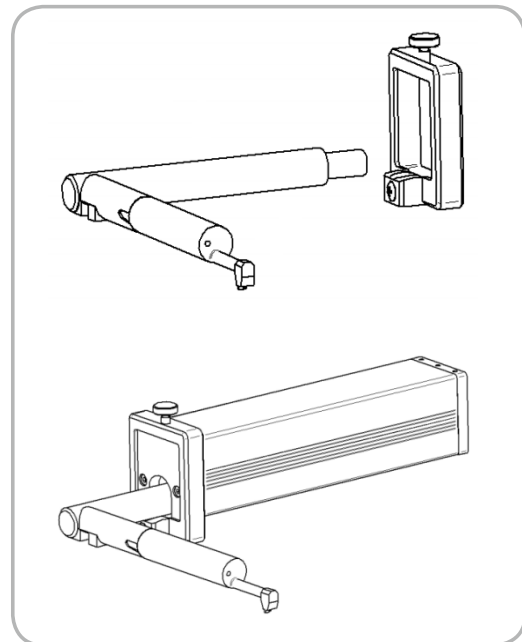
TIME S217 for powder metallurgy

Radius for needle point:	2µm
Width of needle point:	70µm
Angle for needle:	90°
Force for needle:	22.4mN



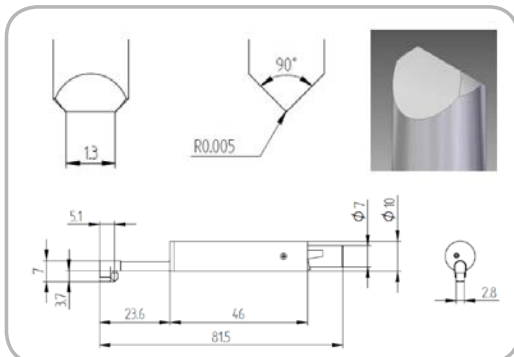
TIME S219 right-angle measuring tool

TIME S219 right-angle measuring tool works with transmit rod and right-angle pickup. It is mainly used to measure the surface roughness of crankshafts and parts that can only be measured when the pickup is right-angled.



TIME S218 axe blade pickup

Radius for needle point:	5µm
Width of needle point:	1.3mm
Angle for needle:	90°
Force for needle:	22.4mN





Features

- Integrated design, easy and convenient to use, especially for narrow space down to 1.5mm
- 55 kinds of measurement parameters conform to ISO/DIN/ ANSI/JIS standards for your convenience
- Rectangular driver for 90 angle measurements, even without lead
- High accuracy in the surface roughness, waviness and primary profile testing.
- LCD displays digital and graphic information
- Numerous optional sensors to approach even the most inaccessible places, with or without leads
- Transfer to PC via RS232 with advanced PC Software TIMESurf for more analyzing management, and data can be stored in Excel file.
- Printer can be connected to print the digital and graphic information
- Wide measurement range up to 800 μm, with the Accuracy 5 % and Repeatability 3%

Optional Accessory

- PC software (TIMESurf for TIME®323X)
- RS232 communication cable

TIME®3231

SURFACE FORM TESTER

Assessed profile	R (Roughness), W (Waviness), P (Primary profile)
Measuring range	±400μm, ±25μm
Filtering	RC,PCRC,Gauss,D-P,ISO 13565
Parameters	R: Ra,Rp,Rv,Rt,Rz,Rq,Rsk,Rku,Rc,RS,RSm, Rlo,RHSC,Rpc,Rmr(c),RzJIS,R3y,R3z W: Wa,Wp,Wv,Wt,Wz,Wq,Wsk,Wku,Wc,WS, WSm,Wlo,WHSC,Wpc,Wmr(c),WzJIS P: Pa,Pp,Pv,Pt,Pz,Pq,Psk,Pku,Pc,PS,PSm, Plo,PHSC,Ppc,Pmr(c),PzJIS Rk: Rk,Rpk,Rvk,Mr1,Mr2
Cut-off length	0.08mm,0.25mm,0.8mm,2.5mm,8mm
Max. tracing length	40mm
Analysis graphs	ADC, BAC
Evaluation length	1L-5L
Resolution	0.001μm/50μm; 0.016μm/800μm
Tolerance	±5%
Display	LCD
Memory	10 groups of primary data
Data output	RS232,USB
Power supply	Li battery / AC adapter
Dimensions (mm)	409×96×98
Weight (g)	2300



Features

- Separated design, easy and convenient to use, especially for narrow spaces down to 1.5mm
- 55 kinds of measurement parameters conform to ISO/DIN/ANSI/JIS standards for your convenience
- Rectangular driver for 90 angle measurements, even without lead.
- High accuracy in the surface roughness, waviness and primary profile testing.
- LCD displays digital and graphic information
- Numerous optional sensors to approach even the most inaccessible places, with or without leads
- Transfer to PC via RS232 with advanced PC Software TIMESurf for more analyzing management, and data can be stored in Excel file.
- Printer can be connected to print the digital and graphic information
- Wide measurement range up to 800 μm , with the Accuracy 5 % and Repeatability 3%
- Adjust angle and lifting height by your choice.
- Full length waving testing with the maximum tracing length up to 50 mm.

Optional Accessory

- PC software (TIMESurf for TIME[®]323X)
- RS232 communication cable

TIME[®]3233

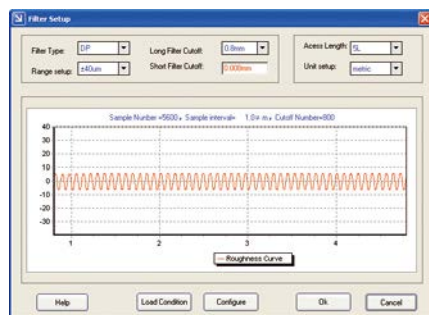
SURFACE FORM TESTER

Technical Specification

Assessed profile	R (Roughness), W (Waviness), P (Primary profile)
Measuring range	$\pm 400\mu\text{m}$, $\pm 25\mu\text{m}$
Filtering	RC, PCRC, Gauss, D-P, ISO 13565
Parameters	R: Ra, Rp, Rv, Rt, Rz, Rq, Rsk, Rku, Rc, RS, RSm, Rlo, RHSC, Rpc, Rmr(c), RzJIS, R3y, R3z W: Wa, Wp, Wv, Wt, Wz, Wq, Wsk, Wku, Wc, WS, WSm, Wlo, WHSC, Wpc, Wmr(c), WzJIS P: Pa, Pp, Pv, Pt, Pz, Pq, Psk, Pku, Pc, PS, PSm, Plo, PHSC, Ppc, Pmr(c), PzJIS Rk: Rk, Rpk, Rvk, Mr1, Mr2
Cut-off length	0.08mm, 0.25mm, 0.8mm, 2.5mm, 8mm, 10mm
Max. tracing length	50mm
Analysis graphs	ADC, BAC
Evaluation length	1L-5L
Resolution	0.001 μm /50 μm ; 0.016 μm /800 μm
Tolerance	$\pm 5\%$
Display	LCD
Memory	10 groups of primary data
Data output	RS232, USB
Power supply	Li battery / AC adapter
Dimensions (mm)	409 \times 96 \times 98
Weight (g)	2300

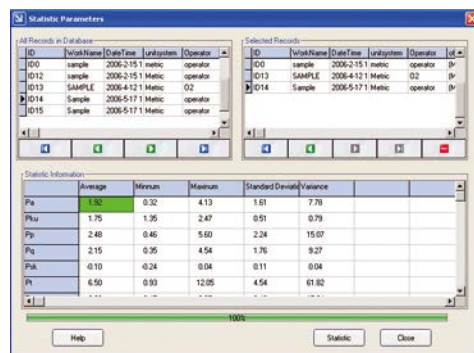
TIMESurf for TIME® 323X

Software works for TIME advanced surface roughness tester TIME®323X managing, analyzing, printing and searching measured data and graphs

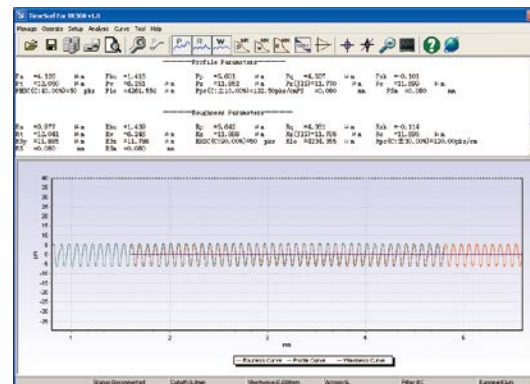
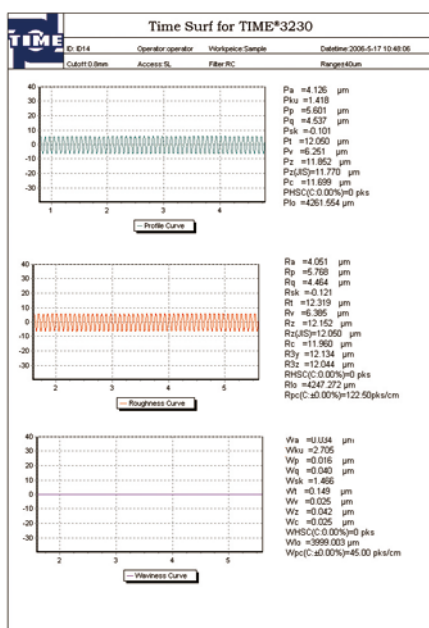


Features

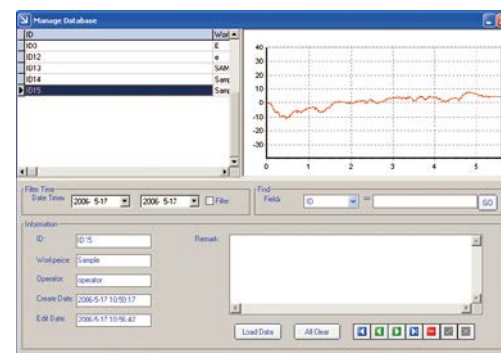
Operator is allowed to perform evaluation of mean value, max. value, min. value, standard deviation and variance by moving mouse. And the calculation results can be stored in a default Excel file or in a Excel file specified by user



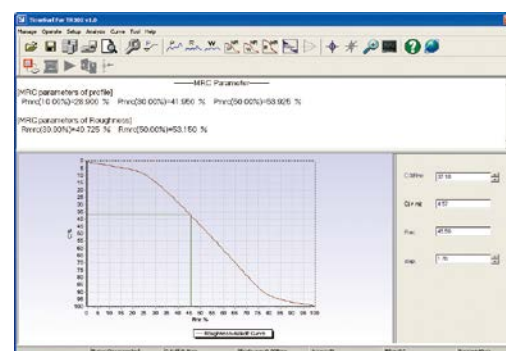
Printing function is designed for operator to make printing report including what is needed about the curves and parameters.



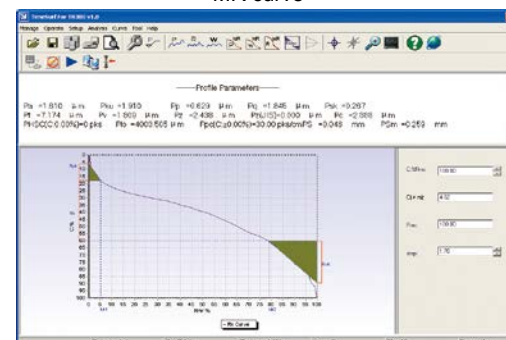
Equipped with powerful data management function. The collected data can be stored as a file or stored in database for user's searching and browse.



Variety of curves are displayed as well as all selected parameters and measured results. And all views (including graphs, figures and any other things) displayed can be printed out with the advanced printing function.



MR curve



RK curve



Features

- Using Linux operation system. High calculation accuracy, fast data processing speed and friendly user interface.
- Separated design for easy operation.
- Portable design, easy to carry.
- It can measure surface roughness, waviness and primary profile.
- It has a wide measuring range of 1000μm and maximum tracing length up to 50mm.
- 5.7 inch TFT LCD screen to clearly display the evaluation curves.
- With touch screen to quickly set the measuring conditions on the screen.
- Mouse operation is supported.
- Store 10,000 groups of measuring conditions and data.
- Measurement data can be stored in U disk.
- Measurement with or without skid.
- Print measurement parameters and profile curves.
- Equipped with optional advanced analysis software.
- Conforming to the roughness standards including ISO 4287-1997; JIS 0601: 2001; ANSI; SEP1941-2012.

TIME®3234 ^{NEW}

SURFACE WAVINESS TESTER

Technical Specification

Profile	R, W, P, R-Motif, W-Motif
Measuring parameters	See the Table on Page 34
Filter	Gauss, 2RC
Cutoff l	0.08mm, 0.25mm, 0.8mm, 2.5mm, 5mm, 8mm, 10mm
Evaluation length ln	(1-5)l
Measuring range	1000μm (±500μm)
Max. resolution	0.0003μm
Tracing length	50mm
Tolerance	±5%(Skid), ±10%(Skidless)
Repeatability	1.5%(Skid), 3%(Skidless)
Storage	10000 groups of measuring conditions and data
Interface	RS232, USB
Power	Built-in Li rechargeable batteries/ External power adapter
Working temperature	0°C~40°C
Storage temperature	-25°C~60°C
Humidity	<90%
Dimensions(mm)	Main unit: 260×210×68
	Driver: 195.5×60×122
Weight(Kg)	Main unit: 1.5
	Driver: 1.58
Power adapter	Input: 100 V~240VAC, 50/60Hz Output: 9V, 3A

TIME[®] 3234 SURFACE WAVINESS TESTER

Standard Delivery

•Main unit	1
•Driver	1
•Standard pickup	1
•Portable stand	1
•Mini USB cable	1
•Template	1
•Power Adapter	1
•User Manual	1
•TIME certificate	1
•Warranty card	1

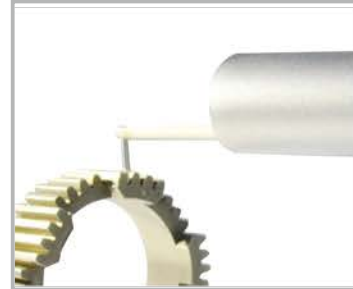
Measuring Parameters

Standard	Profile Curves	Parameters
ISO1997	R	Ra, Rq, Rz, Rp, Rv, Rsk, Rku, Rc, RPc *, RSm, R△q, Rmr*, Rmr(c) *, Rδc*, Rt, Rz1max, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo
	P	Pa, Pq, Pz, Pp, Pv, Psk, Pku, Pc, PPc*, PSm, P△q, Pmr*, Pmr(c) *, Pδc*, Pt, Pz1max
	W	Wa, Wq, Wz, Wp, Wv, Wsk, Wku, Wc, WPC1, WSm, W△q, Wmr*, Wmr(c) *, Wδc*, Wt, Wz1max
JIS2001	R	Ra, Rq, Rz, Rp, Rv, Rsk, Rku, Rc, RSm, RzJIS, R△q, Rmr*, Rmr(c) *, Rδc*, Rt
	P	Pa, Pq, Pz, Pp, Pv, Psk, Pku, Pc, PSm, PzJIS, P△q, Pmr*, Pmr(c) *, Pδc*, Pt
	W	Wa, Wq, Wz, Wp, Wv, Wsk, Wku, Wc, WSm, WzJIS, W△q, Wmr*, Wmr(c) *, Wδc*, Wt
ANSI	R	Ra, Rq, Rz, Rp, Rv, Rsk, Rku, RPc*, RSm, R△a, R△q, Htp*, tp*, Rt, Rmax, Rpm
	W	Wa, Wq, Wz, Wp, Wv, Wsk, Wku, WPC*, WSm, W△a, W△q, Htp*, tp*, Wt, Wmax, Wpm

Pickup for TIME® 323X



TIME S230 standard pickup



TIME S230V pickup (7mm changeable diameter)



TIME S230U pickup (7mm)



TIME S231 pickup for tooth surface (120° probe)



TIME S232 pickup for small hole (ø1.33)



TIME S233 pickup for deep groove (10mm)

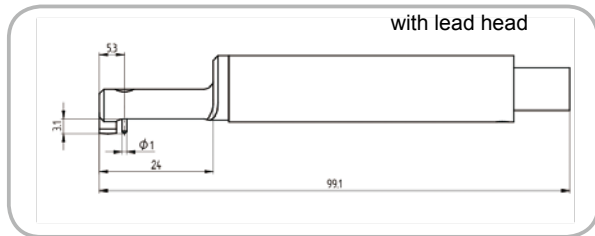


TIME S236 pickup for extra deep groove (20mm)

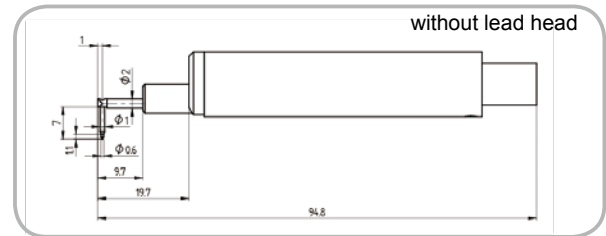


TIME S238 pickup for super deep groove (30mm)

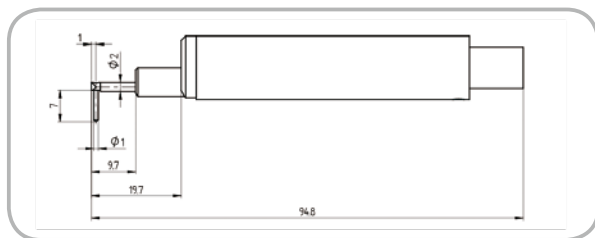
Pickup for TIME[®] 323X



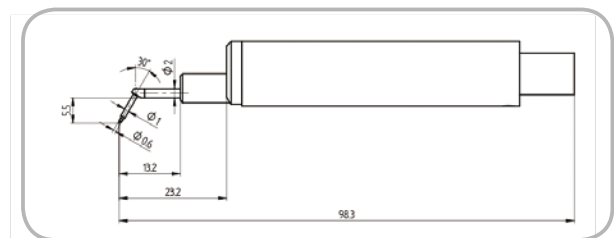
TIME S230 standard pickup



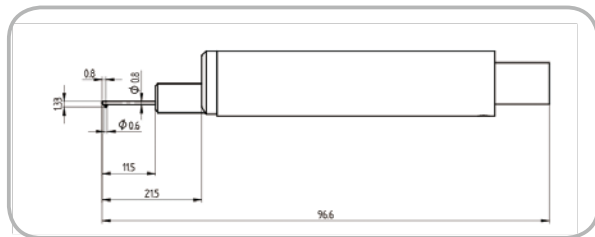
TIME S230V pickup



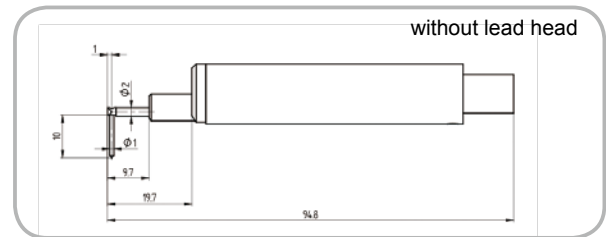
TIME S230U pickup



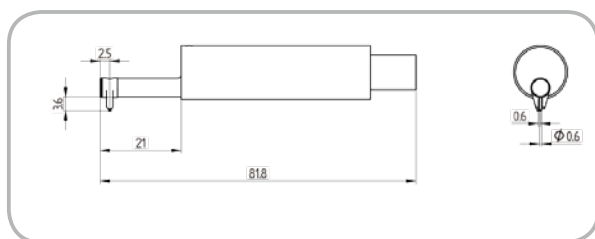
TIME S231 pickup for tooth surface



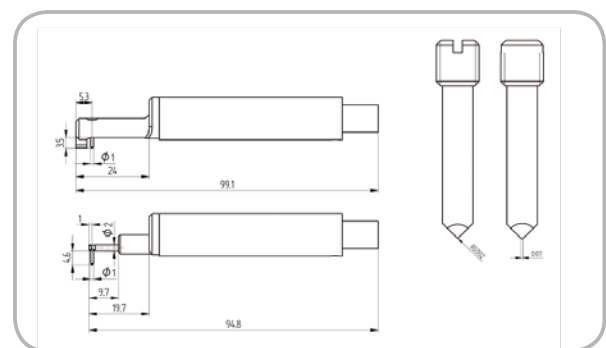
TIME S232 pickup for small hole



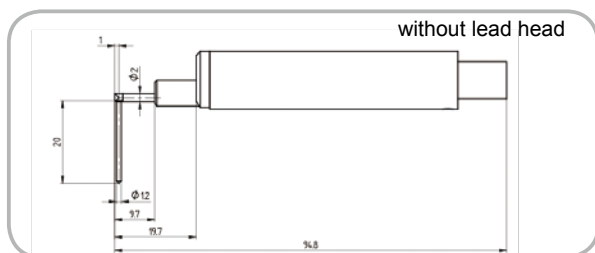
TIME S233 pickup for deep groove



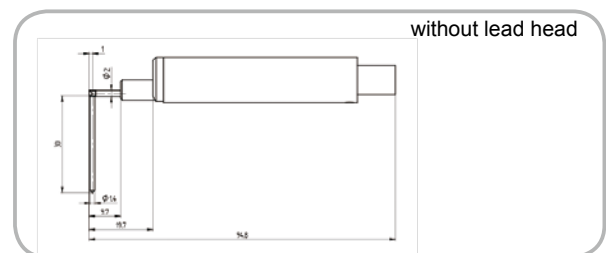
TIME S234 pickup for curved surface



TIME S235 pickup for axe-cutter



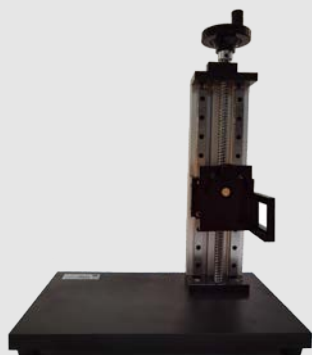
TIME S236 pickup for extra deep groove



TIME S238 pickup for super deep groove

MEASURING PLATFORM

TIME[®] A202

**Specifications:**

Dimensions: 300mm×200mm×400mm

Y-axial range: 200mm

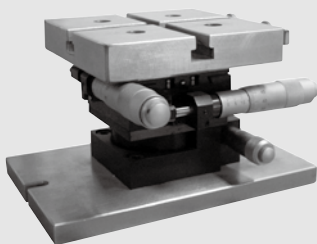
Rotation: -85°~+85°

Weight: 9.5kg

Features:

Small, light and easy to carry. Easy operation and suitable for various roughness testers.

TA630

**Specifications:**

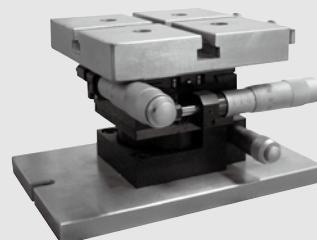
X-axial range: ±12.5mm;

Y-axial range: ±12.5mm;

Rotation: coarse adjustment 360°, fine adjustment ±5°;

Pitching: 0° ~ 5°.

TA631

**Specifications:**

X-axial range: ±12.5mm;

Y-axial range: ±12.5mm;

Rotation: Coarse adjustment 360°, fine adjustment: ±5°.

TA650

**Specifications :**

Y-axial range: 300 ± 1 mm

The dimension of measuring platform: 600mm×420mm×80mm

Adjusting range of leveling table

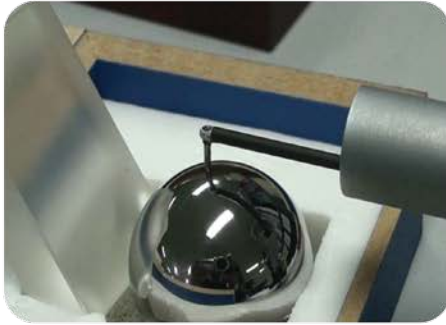
X-axial direction: ±12.5 mm

Y-axial direction: ±12.5 mm

Rotation: 360°; fine adjustment: ±5°

Pitching: 0° ~ 5°

Applications for TIME[®] 323X





Coating Thickness Gauge

D1	Coating Thickness Gauge TIME®2500/2501	P41
D2	Coating Thickness Gauge TIME®2510	P42
D3	Coating Thickness Gauge TIME®2510E	P43
D4	Coating Thickness Gauge TIME®2511/TT210	P44
D5	Coating Thickness Gauge TIME®2601	P45
D6	Coating Thickness Gauge TIME®2605	P48

TIME[®]2500/2501

COATING THICKNESS GAUGE

Standard Delivery

•Main unit	1
•Calibration foil set	1
•Substrate	1
•AAA1.5V battery	2
•TIME certificate	1
•Warranty card	1
•Instruction manual	1



Features

- TIME2500 is integrated with probe F: magnetic induction principle to test the thickness of non-magnetic materials (e.g. paint, plastic, porcelain enamel, copper, zinc, aluminum, chrome etc.) on magnetic materials (e.g. iron, nickel etc.).
- TIME2501 is integrated with Probe N: the eddy current principle to measure the thickness of insulating coatings on non-magnetic materials (enamel, rubber, paint and plastics coatings on the base of copper, aluminum, zinc, tin, etc.).
- Zero point calibration and two-point calibration to correct the system error of the probe
- Features two working modes: DIRECT and BATCH & two measuring ways: CONTINUE and SINGLE
- Statistics include the mean, maximum, minimum, test numbers and standard deviation.
- Memory of 500 data
- Deletion of current data, calibrated data, limit data and all data stored.
- Low battery indication and error alarm
- Buzz during operation for indication
- Backlight for the screen
- Auto or manual shutdown

Technical Specification

Probe Type		TIME2500		TIME2501	
Measuring methods		Magnetic induction(F)		Eddy current(N)	
Measuring range		0~1250μm			
Display resolution		0.1μm			
Tolerance	Zero point calibration(μm)	± (3%H+1)		± (3%H+1.5)	
	Two points calibration(μm)	± [(1%~3%) H+1]		± [(1%~3%) H+1.5]	
Measuring condition	Min.curvature radius(mm)	convexity 1.5	concave 9	convexity 3	concave 10
	Min.testing area diameter(mm)	Ø7		Ø5	
	Critical thickness of substrate (mm)	0.5		0.3	
Power		AAA 1.5V Battery (2 pcs)			
Working environment		0~40℃; humidity: 20%~90%			
Dimensions (mm)		145×60×28			
Weight (g)		132			

TIME[®] 2510

COATING THICKNESS GAUGE

Standard Delivery

•Main unit	1
•Substrate	2
•Calibration foil	1
•AAA 1.5V battery	2
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Optional Accessory

- Connecting cable
- Dataview

Features

- Two principle of operation are adopted: magnetic induction (ferrous) and eddy current (non-ferrous) to take non-destructive measurements
- Zero point calibration and two-point calibration to correct the system error of the probe
- Features two working modes: DIRECT and BATCH & two measuring ways: CONTINUE and SINGLE
- Statistics include the mean, maximum, minimum, test numbers and standard deviation.
- Automatic recognition of substrate.
- Memory of 600 data
- Deletion of current data, calibrated data, limit data and all data stored.
- Low battery indication and error alarm
- Buzz during operation for indication
- Auto or manual shutdown



Technical Specification

Probe types		F	N
Working principle		Magnetic induction	Eddy current
Measuring range		0-1250 μm	0-1250 μm, 0-40μm (for chrome plate on copper)
Minimum resolution		0.1μm	
Tolerance	Zero point calibration	±(3%H+1) μm	±(3%H+1.5) μm
		H means the thickness of tested piece	
	Two points calibration	±{(1-3)%H+1}μm	±{(1-3)%H+1.5}μm
		H means the thickness of tested piece	
Measuring condition	Min. curvature radius	Convexity 1.5 mm	Convexity 3 mm
	Min. area diameter	Φ7 mm	Φ5 mm
	Critical thickness of the base	0.5 mm	0.3 mm
Operating environment		Temperature: 0°C - 40°C	
		Humidity: 20%-90%	
		No strong magnetic field	
Power		2 pcs AAA 1.5 V battery	
Dimension		110 x 50 x 23 (mm)	
Weight		100 g	

TIME® 2510E

COATING THICKNESS GAUGE

Standard Delivery

●Main unit	1
●Substrate	2
●Calibration foil	1
●AAA 1.5V battery	2
●TIME certificate	1
●Warranty card	1
●Instruction manual	1

Optional Accessory

- Connecting cable
- Dataview

Features

- Two operation principles are adopted: magnetic induction (ferrous) and eddy current (non-ferrous) to take non-destructive measurements
- Zero point calibration and two-point calibration to correct the system error of the probe
- Two working modes: DIRECT and BATCH & two measuring ways: CONTINUE and SINGLE
- Statistics include the mean, maximum, minimum, test numbers and standard deviation.
- Automatic recognition of the substrate.
- Memory of 600 data
- Deletion of current data, calibrated data, limit data and all data stored.
- Low battery indication and error alarm
- Buzz during operation for indication
- Auto or manual shutdown



Technical Specification

Probe types		F	N
Working principle		Magnetic induction	Eddy current
Measuring range		0-1250 μm	0-1250 μm , 0-40 μm (for chrome plate on copper)
Minimum resolution		0.1 μm	
Tolerance	Zero point calibration	$\pm(3\%H+1) \mu\text{m}$	$\pm(3\%H+1) \mu\text{m}$
		H means the thickness of tested piece	
	Two points calibration	$\pm\{(1-3)\%H+1\} \mu\text{m}$	$\pm\{(1-3)\%H+1\} \mu\text{m}$
		H means the thickness of tested piece	
Measuring condition	Min. curvature radius	Convexity 1.5 mm	Convexity 3 mm
	Min. area diameter	$\Phi 7 \text{ mm}$	$\Phi 5 \text{ mm}$
	Critical thickness of the base	0.5 mm	0.3 mm
Operating environment		Temperature: 0°C - 40°C	
		Humidity: 20%-90%	
		No strong magnetic field	
Power		2 pcs AAA 1.5 V battery	
Dimension		110 x 50 x 23 (mm)	
Weight		100 g	

TIME[®]2511/TT210

COATING THICKNESS GAUGE

Standard Delivery

•Main unit	1
•Substrate	1
•AAA 1.5V battery	2
•Waist pack for main unit	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Features

- TIME2511 adopts magnetic induction (F) measuring method.
- TT210 adopts two measuring methods: magnetic induction (F) and eddy current (N).
- Single point measurement mode for TIME2511; two measuring modes for TT210: Continuous / Single
- Easy zero point calibration
- TIME2511: 3 adjustable resolutions for different applications
- High speed data collection
- Automatically switch off
- Easy conversion between mm and inch



TIME2511



TT210

Technical Specification

Model		TIME2511			TT210	
Probe types		F			F	N
Measuring methods		magnetic induction			magnetic induction	eddy current
Measuring range		0~1250μm			0~1250μm	0~1250μm 0~40μm (for chrome plate on copper)
Minimum resolution		1μm	5μm	10μm		
Tolerance	Zero point calibration	±(3%H+1)μm	± (3%H+1.5)μm	± (3%H+10)μm	±(3%H+1)μm	± (3%H+1.5)μm
		H means the thickness of tested piece				
	Two points calibration				±[(1~3)%H+1]μm	±[(1~3)%H+1.5]μm
		H means the thickness of tested piece				
Min. curvature radius (mm)		Convexity 1.5			Convexity 1.5	Convexity 3
Min. testing area diameter (mm)		Ø7			Ø7	Ø5
Critical thickness of substrate (mm)		0.5			0.5	0.3
Power supply		Battery AAA (2pcs)				
Working temperature		0~40°C				
Dimensions (mm)		110×50×23				
Weight (g)		100				

TIME® 2601

COATING THICKNESS GAUGE

Standard Delivery

●Main unit	1
●Probe	1
●Substrate	1
●Calibration foil	1
●Charger	1
●Printing paper	1
●TIME certificate	1
●Warranty card	1
●Instruction manual	1



Technical Specification

Measuring range	see table in page 46
Probe available	
Tolerance	
Minimum resolution	
Measuring condition	
Standards	DIN,ISO,ASTM,BS
Calibration	Zero and foil calibration
Interface	RS232
Statistic	Number of measurement, mean, standard deviation, maximum and minimum
Data memory	640 readings
Limits	Adjustable with alarm
Power	NiMH rechargeable battery
Operating environment	Temperature: 0~40°C
	Humidity: 20%~90%
	No strong magnetic field
Dimensions (mm)	230×86×47

Features

- Two principles of operation are adapted: magnetic induction (ferrous) and eddy current (non-ferrous) to take non-destructive measurements
- 6 types of probes are available for different applications
- Features two working modes: DIRECT and BATCH& two measuring ways: CONTINUE and SINGLE
- Statistics include the mean, maximum, minimum, test numbers and standard deviation.
- Memory of 640 data
- Two calibration methods for better correction
- Integrated with printer to print the statistics values if needed
- Low battery indication and error alarm
- Backlight for the screen
- Auto or manual shutdown
- Conform to the standards of DIN, ISO, ASTMBS.

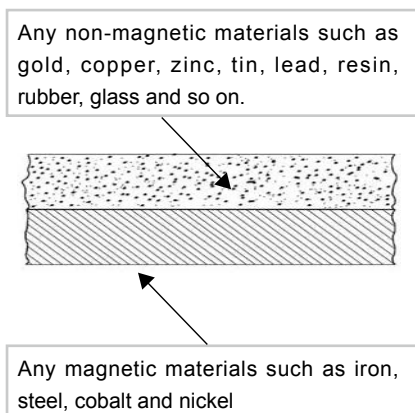
Optional Probes and Application Guide

Probe model		F400	F1	F1/90°	F10	N1	CN02
Operating principle		Magnetic induction				Eddy current	
Measuring range (μm)		0-400	0-1250		0-10000	0 to 1250 μm 0 to 40μm (for chrome plate on copper)	10~200
Low range resolution (μm)		0.1	0.1		10	0.1	1
Accuracy	One-point calibration (μm)	±(3%H+1)			±(3%H+10)	±(3%H+1.5)	±(3%H+1)
	Two-point calibration (μm)	±[(1~3)%H+0.7]	±[(1~3)%H+1]		±[(1~3)%H+10]	±[(1~3)%H+1.5]	-
Measuring conditions	Min curvature of the min area (mm)	Convex: 1	1.5	Flatten or Pipe(R>7mm)	10	3	Flatten
	Diameter of the min area (mm)	φ3	φ7		φ40	φ5	φ7
	Critical thickness of substrate (mm)	0.2	0.5		2	0.3	unlimited

Application of two measuring methods

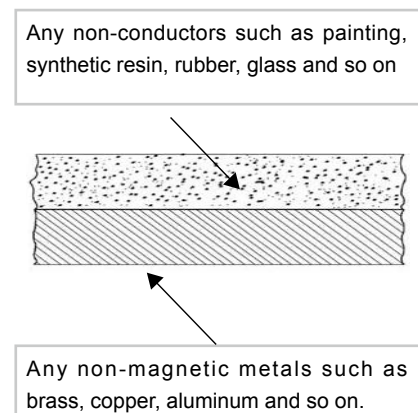
Magnetic induction (F)

- Coating: non-magnetic material
- Substrate (base): magnetic material



Eddy current (N)

- Coating: non-conductors
- Substrate (base): non-magnetic metals



Reference Table for Probe selection

Substrate \ Coatings		Non-magnetic coatings (Organic materials like paint, enamel, plastic)		Non-magnetic metal coatings (Chromium, Zinc, Copper, Tin, Silver, etc.)	
		Thickness of coating less than 100μm	Thickness of coating more than 100μm	Thickness of coating less than 100μm	Thickness of coating more than 100μm
Steel, iron and other magnetic metal	Diameter of testing area is more than 30mm	F1 probe: 0~1250 μm F400 probe: 0~400μm	F1 probe: 0~1250 μm F10 probe: 0~10mm	F1probe: 0~1250μm F400probe: 0~400 μm	F1 probe: 0~1250 F10probe: 0~10mm
	Diameter of testing are is less than 30mm	F400 probe:0~400μm	F1 probe: 0~1250 μm F400 probe: 0~400μm	F400probe: 0~400μm	F1 probe: 0~1250μm F400 probe: 0~400
Copper, Brass, Aluminum, Zinc, Tin and other metal	Diameter of testing area is more than 5mm	N1 probe:0~1250μm		N1 probe:0~40μm (For chrome plate on copper only)	
Nonmetallic substrate	Diameter of testing are is more than 7mm	-	-	CN02 Probe:10~200μm (Mainly for testing copper foil)	

TIME[®] 2605

COATING THICKNESS GAUGE

Standard Delivery

•Main unit	1
•Probe	1
•Substrate	1
•Calibration foil	1
•Charger	1
•TIME certificate	1
•Warranty card	1
•Instruction manual	1

Features

- Two principles of operation are adapted: magnetic induction (ferrous) and eddy current (non-ferrous) to take non-destructive measurements.
- Features two working modes: DIRECT and BATCH & two measuring ways: CONTINUE and SINGLE
- Statistics include the mean, maximum, minimum, test numbers and standard deviation.
- Memory of 10000 data
- Adjustment and Correction: the system error can be corrected by basic calibrating method.
- Alarming function: alarming automatically if measuring values out of pre-set limitation
- Battery Indicator: Low battery indicator
- Printing function: measuring value, statistic value can be printed
- Error warning Function: error warning in display during malfunction
- Manual or automatic shutdown.



Technical Specification

Probe	F1.5	N1.5	FN1.5	F1.5R	F3.5	FN3.5	F10
Working principle	Magnetic induction	Eddy current	Both	Magnetic induction	Magnetic induction	Both	Magnetic induction
Measuring range	0-1500 μm				0-3500 μm	F: 0-3500 μm N: 0-3000μm	0-10000 μm
Minimum resolution	0.1μm				0.1μm		1μm
Tolerance	±(1%H+1)				±(1%H+3)		±(1%H+5)
Min. curvature radius	Convex 1.5 mm				Convex 5 mm		Convex 10mm
Min. area diameter	Φ7 mm				Φ10mm		Φ40mm
Critical thickness of the base	0.5 mm	0.3mm	F: 0.5mm N: 0.3mm	0.5 mm	0.5 mm		2mm
Temperature	10℃ - 30℃						
Humidity	≤75%RH						
Working environment	No strong magnetic field						
Power	Li Battery 1 x 3.7V 2200mAh						
Dimension	203.4 x 92.1 x 52.1 (mm)						
Weight	400g (main unit)						



Ultrasonic Thickness Gauge

E1	Ultrasonic Thickness Gauge TIME [®] 2110/2113	P50
E2	Ultrasonic Thickness Gauge TIME [®] 2130/2132/2134	P51
E3	Ultrasonic Thickness Gauge TIME [®] 2136	P53
E4	Ultrasonic Thickness Gauge TIME [®] 2170	P54
E5	Ultrasonic Thickness Gauge TIME [®] 2190	P56



Thickness check of pressure pipelines



Monitoring of wall thickness of vessels easy to corrode such as oilcans



Thickness monitoring of pressure vessels such as boilers



Quality control of forging and casting parts



Routine maintenance of roads and bridges



Corrosion check of ship walls and bottom



Features

- Free conversion between metric and imperial
- Automatic calibration of zero point: automatically correct the system errors
- Automatic non-linear compensation: computer software is used to correct the non- linear errors of the probe for the purpose of improving the accuracy
- The upward and downward adjustment keys enable prompt selection of sound velocity, thickness, and check the thickness memory units
- Prompt indication for coupling state
- Sound velocity can be measured according to the test block's thickness
- Ten thickness values can be stored without loss after turn-off
- Sound velocity of five different materials can be stored directly needless to search in the conversion table
- Low voltage indication and automatic turn-off
- Oil proof protection for longer service life

TIME®2110/2113

ULTRASONIC THICKNESS GAUGE

Standard Delivery

- Main unit 1
- 5PΦ10 probe 1
- Couplant 1
- AAA battery 1
- TIME certificate 1
- Warranty card 1
- Instruction manual 1

Optional Accessory

- 5P 10/90 probe (1.2~225.0mm)
- SZ2.5P probe (3.0~300.0mm)
- 7PΦ6 probe (0.75~60mm)

Technical Specification

Measuring range	1.2~225.0mm	
Display type	4-digit LCD	
Minimum display unit	TIME®2110	0.1mm
	TIME®2113	0.01mm
Sound velocity range	1000m/s~9999m/s	
Measuring error	$\pm(1\%H+0.1)$ mm, H is the actual thickness of the object to be measured.	
Power supply	two AAA alkaline cells 1.5V	
Power consumption	working current is smaller than 20mA (3V)	
Range of operating temperature	0°C~ 40°C	
Dimensions (mm)	124×68×27	
Weight (g)	140	

TIME[®]2130/2132/2134

ULTRASONIC THICKNESS GAUGE

Optional Accessory

- Optional transducers
- Dataview software for TIME[®]2130

Standard deliveries

- Main unit 1
- Transducer 5PΦ10/90° 1
- Transducer ZW5P for TIME[®]2132 1
- Transducer TSTU32 for TIME[®]2134 1
- Rubber jacket 1
- Couplant 1
- Batteries AA 1.5V 2
- Screwdriver 1
- TIME certificate 1
- Warranty card 1
- Instruction manual 1



TIME[®]2130



TIME[®]2132



TIME[®]2134

Features

- TIME[®]2130: Equipped with RS232 interface to connect printer and PC with optional software.
5PΦ10/90° transducer for normal purpose and optional TSTU32 transducer for casting iron.
- TIME[®]2132: Anti-high-temperature reaching up to 300°C
- TIME[®]2134: equipped with TSTU32 transducer for casting iron
- Free conversion between metric and imperial
- Automatic calibration of zero point: automatically correct the system errors
- Gain adjustment, Low voltage indication and automatic turn-off
- 500 test data and 5 sound velocity can be stored, delete and review
- Big LCD screen with back-light and adjustable contrast ratio
- Equipped with the mode to capture the minimum
- Two display modes: current thickness or minimum thickness
- Two point calibration for high accuracy
- Upper / lower limits pre-setting and sound alarm
- Resolution 0.001mm and 0.01mm selectable

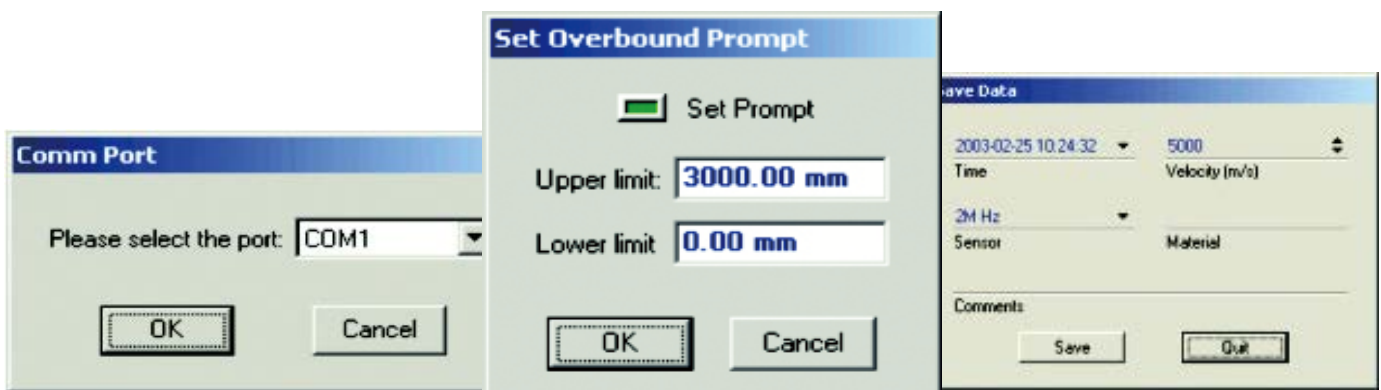
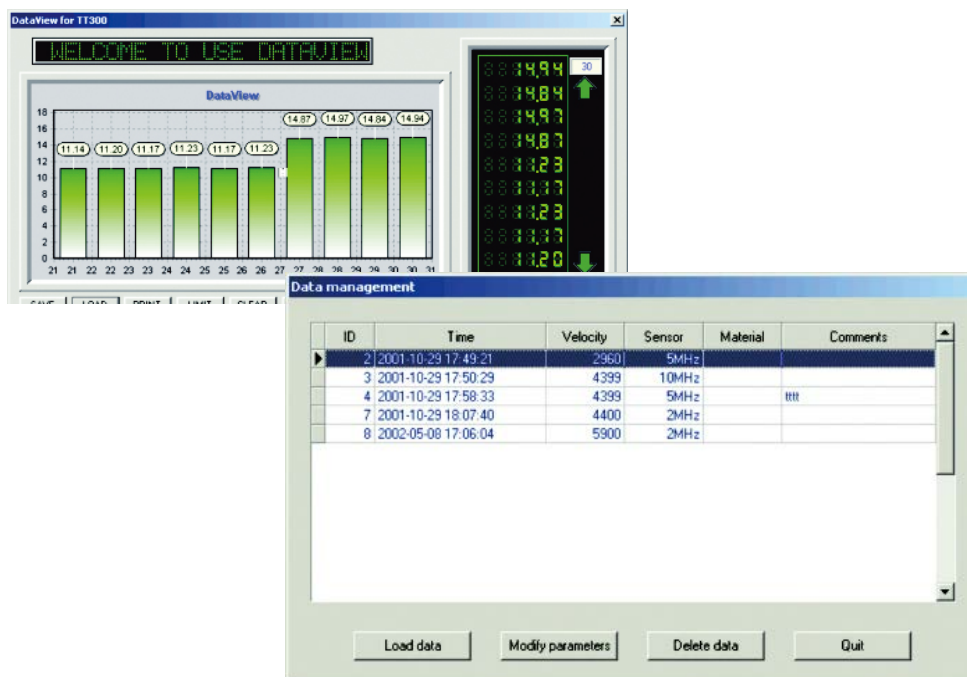
Technical specification

	TIME®2130	TIME®2132	TIME®2134
Measuring range	0.75mm-300.00mm(steel) (depend on probe)	1.2mm-225.0mm (steel) 5.0mm-80.0mm (steel high-temp)	1.2mm-300.00mm 5.0mm-40.0mm (casting iron)
Measuring accuracy	±(1%H+0.1)mm (H means the thickness of tested piece)		
Lower limits of steel pipes	φ20mm x 3.0mm		
Display resolution	0. 1mm/0.01mm or 0.01/0.001inch	0. 1mm or 0.01inch	
Data output	RS232 Output for printer or pc	----	
Sound velocity	1000m/s~9999m/s		
Power supply	AA batteries (2pcs) 1.5V		
Battery life	100 hours without backlight		
Sound speed	1000m/s~9999m/s		
Unit scales	mm/inch		
Operating temperature	-10℃~ +60℃	-10℃~ +300℃	-10℃~ +60℃
Dimensions (mm)	152 ×74 ×35		
Weight (g)	370		

TIME[®]2130/2132/2134

ULTRASONIC THICKNESS GAUGE

Dataview for TIME[®]2130





Features

- Measure through coated surfaces and eliminate the thickness of the paint using a dual element style transducer in echo-echo mode
- Identify the standard transducer automatically, or preset the transducer frequency manually
- Transducer TSTU17 and TSTU32 are optional to measure various materials
- Connect to the printer or PC via RS232 interface
- Upper /lower limits pre-setting and sound alarm
- Differential mode shows the difference between the test thickness value and the user-setting thickness range.
- Memory of 500 test data
- Resolution 0.001mm and 0.01mm selectable for your use

TIME®2136

ULTRASONIC THICKNESS GAUGE

Standard Delivery

- Main unit
- Transducer 5PΦ10/90°
- Couplant
- Sheath for main unit
- TIME certificate
- Warranty card
- Instruction manual

Optional Accessory

- Communication cable
- Standard plate
- Transducer TSTU17
- Transducer TSTU32

Technical Specification

Measuring range(depends on probe)	Transducer 5PØ10/90°: 1.2-200mm (steel in T-E testing mode) 3~20mm(steel in E-E mode) Transducer TSTU32: 5mm~300mm(steel in T-E testing mode)
Display resolution	0.001mm or 0.01mm
Sound speed	1000~9999m/s
Display	Backlight
Measuring accuracy	±1%H+0.1mm (H means the thickness of tested plate)
Data output	RS232
Calibration plate	4.0mm(steel)
Power	AA batteries 1.5V (2pcs)
Unit scales	mm/inch
Operating temperature	-10~60°C
Dimensions (mm)	152×74×35
Weight (g)	220



Features

- Especially suitable for testing thin workpieces while keeping high accuracy
- I-E testing mode and E-E testing mode
- Sound velocity calibration and single point calibration
- Sound alarm and differential mode are available
- Free conversion between metric and imperial
- Up to 500 data can be stored, reviewed and deleted
- Backlight and adjustable contrast
- Result can be print out and transfer to PC

TIME® 2170

ULTRASONIC THICKNESS GAUGE

Standard Delivery

• Main unit	1
• Transducer 15Pø6	1
• Screw driver	1
• Protection sheath for main unit	1
• Connecting protection sheath	1
• Cover protection sheath	1
• AA battery 1.5V	2
• Couplant	1
• TIME certificate	1
• Warranty card	1
• Instruction manual	1

Optional Accessory

- Communication cable

Technical Specification

Measuring range	0.15~20mm
Display resolution	0.001 mm and 0.01 mm selectable
Sound velocity range	1000m/s~9999m/s
Power	AA batteries 1.5V(2 pcs)
Operating temperature	0~40°C
Dimension (mm)	152× 74× 35
Weight (g)	220

Connecting Cable



5PØ10 for TIME®211 series



5PØ10/90° for for TIME®211 series, TIME®213 series



7PØ6 for for TIME®211 series, TIME®2130



TSTU32 for TIME®2134



SZ2.5P for for TIME®211 series



ZW5P for TIME®2132

Technical Specification

Transducer	Feature	Testing range	Contacting diameter	Frequency	Tested surface temperature
5PØ10	Standard straight	1.2~225.0mm(steel)	10mm	5MHz	-10°C~+60°C
5PØ10/90°	Standard angle	1.2~225.0mm(steel)	10mm	5MHz	-10°C~+60°C
7PØ6	Small diameter	0.75~60mm, 15×2.0mm (steel)	6mm	7MHz	-10°C~+60°C
ZW5P	High-temperature	4.0-80.0mm(steel)	12mm	5MHz	-10°C~+300°C
SZ2.5P	High penetration	3.0-300.0mm(steel)	12mm	2.5MHz	-10°C~+60°C
TSTU32	High penetration	5.0~40.0mm (cast iron)	22mm	2MHz	-10°C~+60°C



Features

- A-scan waveform can be displayed for echo analysis and measurement of complex workpiece
- Compatible with many types of transducers, both single and dual element transducers
- Users can set blanks to shield aftershocks or clutter
- Echo-echo measures the true metal thickness while ignoring the thickness of coating layer.
- Thru-coat technology measures metal and nonmetallic coating thickness.
- Signal auto-amplification function
- Adjustable voltage variable pulse width square wave pulse generator
- Single value B-scan display function
- Fast measurement mode up to 20 times per second
- Set upper and lower limits and alarm
- Data can be output to a removable MicroSD memory card. Can store up to 500,000 measured values and waveforms.

TIME®2190 **NEW**
ULTRASONIC THICKNESS GAUGE

Standard Delivery

• Main unit	1
• 5MHz double element transducer	1
• Couplant	1
• AA battery	3
• TIME certificate	1
• Warranty card	1
• Instruction manual	1

Optional Accessory

- Standard block
- Optional transducers (see next page)

Technical Specification

Measurement range	0.20~500mm
Velocity range	508m/s~18699m/s
Display screen	Color TFT LCD, 320x240 pixels
Pulse generator	Adjustable Square Wave Pulse Generator
Resolution	0.001mm or 0.01 or 0.1mm optional
Emission voltage	60V, 110V, 150V, 200V optional
Emission pulse width	varies with transducer frequency
Gain range	0-99dB, 1dB step
Frequency range	0.5 Mhz~20Mhz
Measurement rate	standard (4Hz), fast (20Hz)
Transducer settings	10 sets of fixed transducer setting and 22 sets of custom transducer setting
Data Storage	500 data files, each capable of storing 1000 measurements and waveforms
Working temperature	0°C~40°
Power	three AA battery or NiMH batteries
Dimensions (mm)	187mm×87 mm×43 mm
Weight (g)	360g

Transducer Measurement Range



Transducer Type	Measuring Range(steel)	Indication Error	Using Mode
5MHz double element narrow pulse transducer DK537EE-5MHZ	1.2~225.0mm 3.0~100.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-Echo
5MHz single element contact transducer DEFM1-SE-5MHZ	5.0~225.00mm 5.0~100.00mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-Echo
TSTU32 2MHz double element transducer TSTU32-2.0MHZ	3.0~300.00mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
1MHz single element contact transducer DEFM1-SE-1MHZ	10~500.00mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
15MHz single element delayblock transducer DEFM2-SE-15MHZ	3.0mm~20.0mm 0.25m~10.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Interface-echo Echo-echo
2.5MHz double element transducer SZ2.5P-2.5MHZ	2.0mm~300.0mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
7MHz double element transducer 7PD6-7.0MHZ	0.75mm~75.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-echo
5MHz double element narrow pulse transducer 5P8SJ-5.0MHZ	0.8mm~225.0mm 3.0m~50.0mm	H<10mm: $\pm 0.05\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+0.5\%H)\text{mm}$	Standard Echo-echo
5MHz high-temperature double element transducer ZW5P-5.0MHZ	1.2mm~225.0mm 4.0m~80.0mm (high-temperature)	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
1MHz double element transducer DC175-1.0MHZ	3.0mm~500.0mm	H<10mm: $\pm 0.1\text{mm}$ H $\geq 10\text{mm}$: $\pm(0.01+1\%H)\text{mm}$	Standard
15MHz single element pen type transducer DLK1225-15MHZ	3mm~8.0mm 0.2m~3.3mm	H<10mm: $\pm 0.05\text{mm}$	Interface-echo Echo-echo

Detecting Modes

- The standard echo detection mode measures the thickness based on the time interval between the excitation pulse and the first back wall echo. User can measure uncoated materials in this mode.
- Automatic echo-echo detection mode allows thickness measurement of materials with paint or coating because the time interval between two successive back-wall echoes eliminate paint or coating thickness.
- Paint thickness measurement can simultaneously display layer thickness and substrate thickness.
- The instrument includes three detection modes (Mode 1, Mode 2, and Mode 3)
 - Mode 1: Measures the time interval between the main pulse signal and the first back-wall echo with direct contact transducer.
 - Mode 2: Measure the time interval between the interface echo (or delay line echo) and the first back-wall echo with a delay line or immersion transducer.
 - Mode 3: Measure the time interval between two successive back-wall echoes with a delay line or a immersion transducer.

Measuring Mode	Echo 1	Echo 2
Mode 1 uses contact transducer	The back echo is usually the negative electrode. However, in special applications where low acoustic impedance materials bonded to high acoustic impedance materials are measured (eg, plastic or rubber is adhered to the metal), the echoes appear to be phase inverted.	Not applicable
Mode 2 uses a delay line transducer or a immersion transducer	When measuring materials with high impedance such as metals and ceramics, the interface echo is usually positive, while when measuring low-impedance materials like most plastics, the echo is negative.	The back-wall echo is typically the negative electrode unless it is from an interface between a low acoustic impedance material and a high acoustic impedance material that are bonded together.
Mode 3 uses a delay line transducer or a immersion transducer	For high impedance materials, the interface echo is usually positive.	The back echo is usually the negative electrode. However, in special measurement applications for some irregular geometry materials, the bottom echo is set to the positive electrode due to the phase distortion causing the positive electrode of the bottom echo to be clearer than the negative electrode.

Guideline to standard velocity in materials

Metals (m/sec)				Non-metals (m/sec)			
Aluminum	6320	Nickel	5630	Acrylic resin	2730	Polyamide	2380
Brass	4640	Platinum	3960	Aluminum oxide	8700	Polyethylene	1900
Cast iron	4500	Silver	3600	Ceramic	5631	Polyurethane	1900
Copper	4700	Steel, mild	5900	Diamond	17500	Polystyrene	2400
Cadmium	2800	Steel, low carbon	5850	Epoxy resin	2650	Porcelain	5600
Chromium	6200	Steel, stainless	5790	Glass	5440	PVC	2400
Gold	3240	Tin	3320	Ice	3980	Rubber (butyl)	1900
Inconel	5720	Titanium	6070	Neoprene	1600	Rubber (soft)	1450
Iron	5900	Tungsten carbon	5650	Nylon	2620	Rubber (vulc.)	2300
Lead	2200	Tungsten	5400	Paraffin	2200	Silicone rubber	948
Manganese	4700	Zinc	4170	Perspex	2850	Teflon	1350
Magnesium	6310	Zirconium	4650	Water glass	2350	Water (20°C)	1480

Applications



500°C Steam Pipe



500°C Tank



Grey Cast Iron
Material



Thinning of
Stamping Parts



Stainless Steel



Oil & Gas Tank



300°C Tank



Measure through
coating



60mm Thickness
Rubber Tires



Steel/Stainless Steel
Composite Pipe



Paint Thickness Test of
FRP Pipe Inner Wall



FRP Sulfuric Acid
Tank