

## Portable Hardness Tester IPX-300

Handheld dynamic metal hardness tester with hardness conversion and automatic position setting.

### Features

- Dynamic hardness testing: quick and reliable
- Impact device D integrated: no cables
- Wide measuring range in HLD and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- For most metals (see table)
- Provided testing at any angle, even upside down
- Simple handling and low test expenditure
- High accuracy tolerance of maximum 0.5% on solid parts
- Clear LCD display showing all functions and parameters
- USB data output and internal memory batch of 255 average readings
- Conforming to ASTM A 956



### TECHNICAL SPECIFICATION

Material	HLD	HRC	HRB	HB	HV	HS
Steel and cast steel	300-900	20-68	38.4-99.5	80-647	80-940	32.5-99.5
Cold work tool steel	300-640	20.4-67	-	-	80-898	-
Stainless steel	300-800	19.6-62	46.5-100.7	85-655	85-802	-
Grey cast iron	360-650	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	131-387	-	-
Cast aluminium alloys	180-560	-	-	30-159	-	-
Brass	200-540	-	13.5-95.3	40-173	-	-
Bronze	300-700	-	-	60-290	-	-
Copper	200-690	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure.

### TECHNICAL SPECIFICATION

Hardness parameter	HLD, HRC, HRB, HV, HB, HS
Tensile strength UTS range (steel only)	sb from 370 to 2000 (106 N/mm <sup>2</sup> )
Measuring range / metallic materials	See table
Accuracy	Within $\pm 0.5\%$ (at HLD = 800) on solid parts
Statistics	Average value
Memory	255 groups, 5 test results per group
Output	USB
Impact device	D (standard) integrated
Workpiece max. hardness value	940HV
Workpiece radius (convex/concave)	R.min = 50mm (with support ring R.min = 10mm)
Workpiece minimum weight	2.5kg on solid support (0.1kg with couplant paste)
Workpiece min. thickness coupled	3mm
Workpiece min. case hardened depth	0.8mm
Indentation depth	See Impact devices data
Power	2 x AAA battery 1.5V (low batt warning) (NOT INCLUDED)
Operating temperature	5 to 50°C
Overall dimensions	135mm x 55mm x 25mm
Weight of main unit	250gr

### Standard Delivery

- Main unit with integrated impact device type D
- Test block with HLD value
- Cleaning brush
- Plastic carrying case
- INSPEX certificate
- Installation & user manual

### Optional Accessories

- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Software
- Data Cable

## Portable Hardness Tester IPX-330

Handheld dynamic metal hardness tester with hardness conversion and automatic position setting.

### Features

- Dynamic hardness testing; quick and reliable
- Wide measuring range in HL value and direct display of converted hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB and Shore HS
- For most metals (see table below)
- Impact device provides testing at any angle, even upside down
- Data output RS-232 and internal memory in a batch of 1250 average readings
- Date and time display
- Lower and upper limits setting with Low-High display judge
- High accuracy  $\pm 0.5\%$
- Conforming to ASTM A 956
- Six impact devices are available for special applications
- Works on standard AAA batteries; auto-off after two minutes



### TECHNICAL SPECIFICATION

Material	HLD	HRC	HRB	HB	HV	HS
Steel and cast steel	300-900	20-68	38.4-99.5	80-647	80-940	32.5-99.5
Cold work tool steel	300-640	20.4-67	-	-	80-898	-
Stainless steel	300-800	19.6-62	46.5-100.7	85-655	85-802	-
Grey cast iron	360-650	-	-	93-334	-	-
Nodular cast iron	400-660	-	-	131-387	-	-
Cast aluminium alloys	180-560	-	-	30-159	-	-
Brass	200-540	-	13.5-95.3	40-173	-	-
Bronze	300-700	-	-	60-290	-	-
Copper	200-690	-	-	45-315	-	-

The ranges are stipulated by the application limits of the relevant static procedure.

### TECHNICAL SPECIFICATION

Hardness parameter	HL, HRC, HRB, HV, HB, HS
Measuring range/metallic materials	See table
Display dimensions	128 x 64 LCD
Display functions	Hardness scale, hardness value, times, average indicator and average value, impact direction, type of impact device connected, memory reference, date, time, battery power consumption
Accuracy	Within $\pm 0.5\%$ (at HLD = 800)
Statistics	Average value
Memory	1250 groups
Output	RS-232 interface
Impact device	D (standard)
Optional impact devices	DL/DC/D+15/G/C/E (see next pages)
Workpiece max. hardness value	940HV
Workpiece radius (convex/concave)	R.min = 50mm (with support ring R.min = 10mm)
Workpiece minimum weight	2kg on solid support (0.1kg with couplant paste)
Workpiece min. thickness coupled	3mm (except with impact device G: 10mm)
Workpiece min. case hardened depth	0.8mm
Indentation depth	See Impact devices data
Power	2 AAA batteries 1.5V (not included)
Operating temperature	5 to 50°C (impact device: 120°C max. briefly)
Overall dimensions	108mm x 62mm x 25mm
Weight of main unit	180gr (including impact device and printer)



### Standard Delivery

- Main unit
- Impact device type D
- Test block HLD value
- Cleaning brush
- INSPEX certificate
- Manual
- Plastic carrying case

### Optional Accessories

- Special impact devices
- Test blocks UKAS certified in any hardness parameter
- Support rings for convex and concave surfaces
- Mini-printer with cable
- Software
- Data cable

## Portable Hardness Tester IPX-340

Portable Hardness Tester with in-built thermal printer.

### Features

- Advanced Leeb hardness tester with in-built thermal printer
- Large LCD, showing all functions and parameters
- Direct display of hardness scales HRB, HRC, HV, HB, HS, HL
- Automatic recognition of Impact devices
- Upper and lower limit with sound alarm
- Test at any angle, even upside down
- Six impact devices are available for special application
- Battery low indication and sound alarm
- Rechargeable Li battery, intelligent charging



### TECHNICAL SPECIFICATION

Hardness scale	HL, HRC, HRB, HRA, HV, HB, HS
Memory	373 ~ 2688 group (Impact times:32 ~ 1)
Measuring range	HLD(170 ~ 960), HRA(59 ~ 85), HRB(13 ~ 100), HRC(20 ~ 68), HB(19 ~ 651), HV(80 ~ 967), HS(30 ~ 100)
Tensile strength U.T.S. range	374 ~ 2652 MPa
Accuracy	±6HLD (760±30HLD) error of displayed value 6HLD (760±30HLD) repeatability of displayed value
Standard Impact Device	D Type
Data Interface	USB 2.0
Optional Impact Devices	DC / D+15 / G / C / DL
Max. Workpiece Hardness	996HV(For Impact Devices D / DC / DL / D+15 / C) 646HB(For Impact Device G)
Min. Radius of Workpiece (convex/concave)	Rmin = 50mm (with special support ring Rmin = 10mm )
Min. Workpiece weight	2 ~ 5kg on stable support 0.05 ~ 2kg with compact coupling
Min. Workpiece thickness	5mm (Impact Devices D/DC/DL/D+15) 1mm (Impact Device C) 10mm (Impact Device G)
Min. thickness of hardened layers	0.8mm
Power	Rechargeable Li Battery, 7.4V, Li(1500mAh)
Continuous Working time	About 300h, (without backlight)
Charging time	4 ~ 5 hours
Operating temperature	0 ~ 40°C
Humidity	≤ 90%
Overall dimensions	212 x 80 x 35mm
Weight	320g

### Standard Delivery

- Main unit
- In-built Printer
- Impact Device Type D
- Test block HLD
- Charger
- Brush
- Connecting cable
- INSPEX Certificate
- Instruction manual
- Data view Software

### Optional Accessories

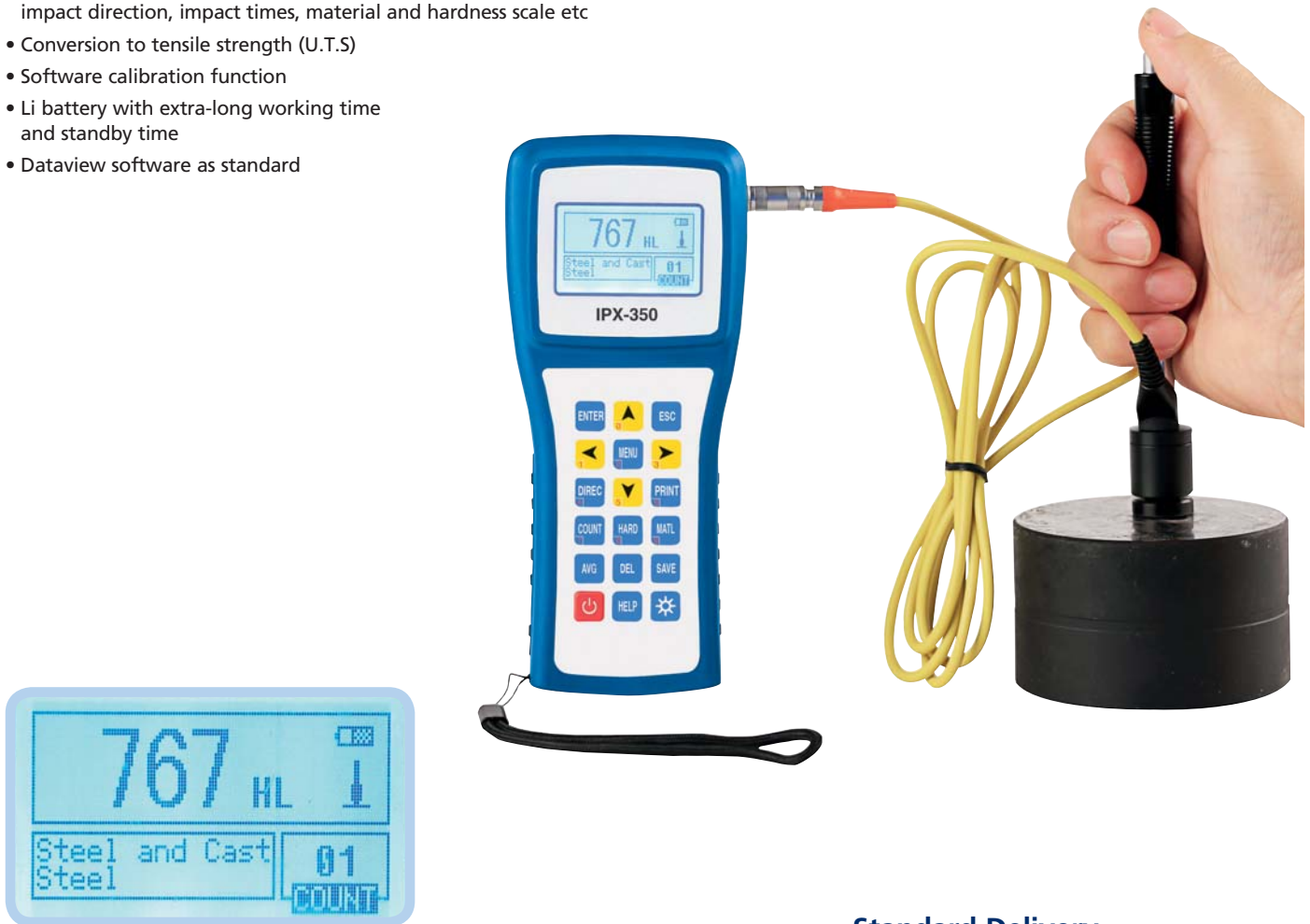
- Optional impact devices
- Optional support rings
- Other test blocks

## Portable Hardness Tester IPX-350

The IPX-350 portable hardness tester measures a wide measuring range in HL value and directly displays converted hardness in HRC, HRB, HRA, HB, HV and HS.

### Features

- Large LED display with backlight display
- Seven impact devices are available for special applications
- Automatically identifies the impact type without re-calibration
- Large memory 48~350 groups (impact average times 32~1)
- Display including single measured value, mean value, testing date, impact direction, impact times, material and hardness scale etc
- Conversion to tensile strength (U.T.S)
- Software calibration function
- Li battery with extra-long working time and standby time
- Dataview software as standard



### TECHNICAL SPECIFICATION

Hardness scale	HL, HRC, HRB, HRA, HV, HB, HS
Display	Dot matrix LCD 128x64 dots
Memory	Data memory: 0~300 groups (impact times: 32~1)
Measuring range	170~960 HLD
Standard Impact Device	360°
Optional Impact Devices	DC, D+15, G, C, DL
Data storage	350 groups maxim, relative to impact times 32~1
Power	3.7 V Li battery
Continuous Working period	100h (without backlight)
Data Output	Micro-USB
Operating temperature	0-40°C
Humidity	≤90%
Dimensions	179 x 77 x 35mm
Weight approx.	175g (main unit)

### Standard Delivery

- Main uni.
- D type impact device
- Support ring
- Cleaning brush
- Test block HLD value
- Charger
- Communication cable
- INSPEX Certificate

### Optional Accessories

- Special impact devices
- Support rings for convex and concave surfaces
- High, medium, low HLD value test block

## Portable Hardness Tester IPX-360

### Features

- Colour display (320x240 TFT) with adjustable backlight
- Hardness scales, HRA, HB for D impact device of alloy tool steel; HV for cast aluminium alloy
- New user material function, user can define own test range.
- Converts to all common hardness scales (HV, HB, HRC, HRB, HRA, HS)
- USB interface
- Seven impact devices are available for special applications
- Max 600 groups (impact times:32~1)
- Upper and lower limit with sound alarm
- Large LED display with backlight display
- Software calibration function
- Rechargeable Li battery with extra-long working time (approx. 200 h)
- Dataview software as standard



### TECHNICAL SPECIFICATION

Hardness scale	HL, HB, HRB, HRC, HRA, HV, HS
Memory	Memory: 0~300 groups (impact times: 32~1)
Measuring range	170~960 HLD
Standard Impact Device	D Type
Optional Impact Devices	DC, D+15, G, C, DL
Power	3.7 V rechargeable Li battery
Continuous Working time approx.	100 h (without back light on)
Display	LCD, Colour display (320x240 TFT) with backlight.
Operating temperature	-10-40°C
Humidity	≤90%
Dimensions	154 x 82 x 35mm (main unit)
Weight approx.	175g (main unit)

### Standard Delivery

- Main uni.
- D type impact device
- Support ring
- Cleaning brush
- Test block HLD value
- Charger
- Communication cable
- INSPEX Certificate

### Optional Accessories

- Special impact devices
- Support rings for convex and concave surfaces
- High, medium, low HLD value test block

## Ultrasonic Portable Hardness Tester MET-U1A

Portable hardness tester for accurate testing on metals, plastics and ceramics.

### Features

- Uses UCI principle of hardness testing
- Suitable for hardness testing of metals, plastics and ceramics
- Rockwell (HRC), Brinell (HB), Vickers (HV) and Shore (HSD)
- Leaves almost no visible indent on the tested article surface



### TECHNICAL SPECIFICATION

Measuring principle	According to the UCI method (ultrasonic contact impedance principle)
Indenter	Vickers diamond (angle 136°)
Test load	14.7N
Measuring range	Vickers 75-1000 Rockwell C 20-70 Brinell 75-650 UTS Mpa 378-1736
Reproducibility	Vickers 12HV Rockwell C 1.5HRC Brinell 10HB Shore 2HS UTS Mpa 5%
Applicable test materials	Primarily metals; plastics or ceramics may be tested using a standard calibration block
Display	Large graphical, backlit display, display of hardness scales HV, HRC, HB
Calibration	Storage of up to 3 calibrations for different materials
Display languages	English
Memory	100 readings also stored when switched off
Measurement results processing	Computation of average value from the data stored in the memory; selective data deleting (for example, in case of doubt in the conducted measurements)
Power	Power supply 100-240V / 50-60Hz
Batteries	16 hrs without backlit, 8hrs with backlit
Operating temperature	-5°C - 45°C
Dimensions	Display unit: 180mm x 80mm x 42mm Probe: 25mm diameter x 160mm length
Weight	1kg

### Standard Delivery

- Main unit
- U1 ultrasonic probe
- Power unit
- Battery: NiMh
- Carrying case
- Instruments certificate
- User and installation manual

### Optional Accessories

- Hardness reference test blocks
- Precision holding fixture for probe
- Battery operated grinder
- Changeable headpiece to probe
- Probe stand

## Ultrasonic Portable Hardness Tester 'Ultramatic 2'

The ULTRAMATIC 2 is the next generation portable and laboratory use ultrasonic hardness tester. The instrument covers several new advanced features that can be selected from a menu-operated full colour display.

### Features

- Ultrasonic Contact Impedance test principle, fast, accurate, easy to use in confined spaces
- Full colour display with easy to operate user interface
- Suitable for hardness tests on metals and ceramics
- Direct reading in Vickers HV, and direct conversion to HRC, HRB, HB & UTS
- High reproducibility, tolerance within  $\pm 1\%$
- Extensive range of application at locations difficult to access
- Large memory, statistics and multiple data outputs
- Windows software for data transmission



### TECHNICAL SPECIFICATION

Measuring principle	According to the UCI method (Ultrasonic Contact Impedance Principle)		
Standards	Conforms to DIN 50159, ASTM A 1038-05 and VDI/VDE directive 2616		
Indenter	Vickers diamond (angle 136°)		
Measuring range	Vickers	HV	10-3000 (direct)
	Rockwell	HRC	20-68 (conversion)
	Rockwell	HRB	41-99.5 (conversion)
	Brinell	HB	(76)-447 (conversion)
	UTS	N/mm <sup>2</sup>	255-2180 (conversion)
Reproducibility	Vickers	HV	$\pm 1\%$
	Rockwell	HRC	$\pm 0.5$
	Rockwell	HRB	$\pm 1.2$
	Brinell	HB	$\pm 1\%$
Applicable testing materials	Preferably metals, for which HV400 can be calibrated. Examinations of ceramic(s) and glass are possible, if comparative measurements are accomplished for calibration		
Display	Large full color graphical display 3.5" colour-LCD, 320 x 240 Pixel		
Calibration	Storage of min. 100 calibrations for different materials		
Display languages	English or German (selectable)		
Memory	500,000 readings, storage in batches with date, hour, and Go/No Go judgement		
Statistics	Mean value, minimum, maximum, standard deviation absolute and relative Delete single readings		
Interface	Serial RS-232C, USB, Host, device, USB-Slave for PC connection (1 pc), USB-Master for printers (2 pcs) or USB flash drives, 100Base-TX (Ethernet), RS-232		
Printer output	Prints hardness values, hour and date. Prints statistics of stored data		
Power supply	100-240V / 50-60Hz		
Batteries	NiMH battery: 4.8V/2700 mAh		
Battery life	Approx. 7 hours		
Battery charging time	Approx. 3 hours		
Operating temperature	0°C to 50°C		
Dimensions	Device: 78mm x 198mm x 160mm (HxWxD)		
	Probe: $\phi 19.5$ mm x 175mm length		
Weight	1400gr (including probe 190gr)		

### Standard Delivery

- Instrument
- Cable
- Power supply 100-240V / 50-60Hz
- Carrying case
- Manual
- CV Instruments certificate

### Optional Probes

- 10N, 20N, 30N, 49N, 98N force

### Optional Accessories

- High precision stand for probe
- Probe shoes for flat surfaces
- Probe shoes for convex surfaces 10mm - 50mm
- Probe shoes for convex surfaces 50mm - 250mm
- Probe SL type (slim nose)
- Windows software program for data transmission to PC (incl. USB cable)
- Plastic handle for probe
- Carrying bag for main unit & accessories
- Mobile printer
- Test block