PORTABLE HARDNESS TESTERS

PORTABLE HARDNESS TESTING

INNOVATEST offers a wide range of portable hardness testing instruments. Most of the common testing methods are represented in this catalogue. Portable instruments often offer an excellent alternative if the workpiece is too heavy or too large to be tested on a bench hardness tester.

Reliability
Its often understand by the public that portable hardness testing instruments are less reliable or less accurate than bench type hardness testers.

This however is a misunderstanding. Portable hardness testers, considering to be manufactured according to the applicable standards, are as accurate as bench hardness tester.
The importance of portable instruments is that they should be applied in a correct manner, respecting the testing conditions as advised for the praticular testing method.

Misuse is often laying on the basis of wrong values obtained by portable testing instruments.

Another recent problem is that there are many cheap, poor quality portable testing instruments available on the market. Such instruments offer promising specifications which in many cases cannot be reached or can be reached but only for a short period of the ''life time'' of such instrument.

It is strongly recommended to buy portable testing instruments that are covered by a decent service system offering regular checks and which have a proven track record of reliability and quality.

Portable testing methods
Most common testing methods are the Leeb hardness, rebound technology, or the UCI ultrasonic hardness test. While the rebound technology conforms to the ASTM and DIN standards, UCI offers the advantage of being more suitable for light weighted and thin components. Barcol and Webster are based on impressing the material with a sharp indentor, portable Rockwell or portable Brinell are more or less spin-offs from the applicable standard methods of such scales.

PORTABLE HARDNESS TESTERS

Being certain...

ALL PORTABLE TESTING INSTRUMENTS
ARE COVERED BY A
3 YEARS FREE CALIBRATION SERVICE.

Simple procedure; return your instrument to
INNOVATEST Europe BV and receive it back in
5 working days with a new 12 months,
UKAS traceable calibration certificate.
No doubts, BE CERTAIN about your measurements!

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WEBSTER

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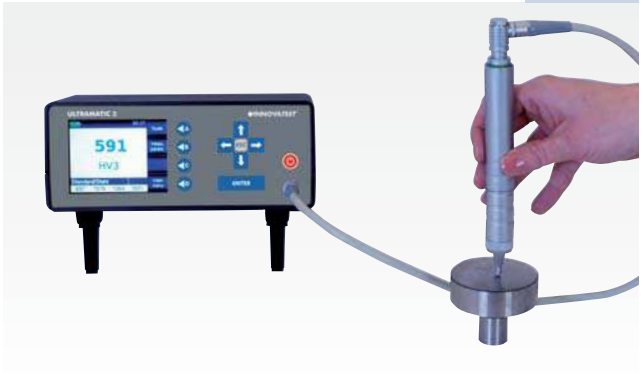

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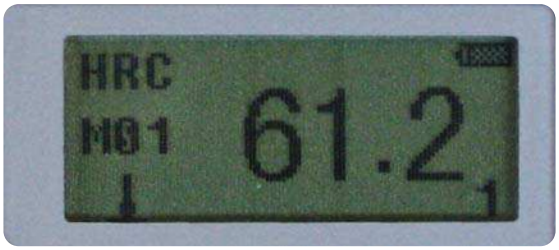
PORTABLE HARDNESS TESTER — IMPACT TH-1100

IMPACT TH-1100
PORTABLE LEEB HARDNESS TESTER

FEATURES

The IMPACT TH-1100 is a small, integrated digital hardness tester which operates according to the dynamic rebound method (standardized according to ASTM A956). The compact design allows easy on-site hardness testing on solid, components that are difficult to transport, or to be used on positions difficult to access by other hardness testers.
Quick and reproducible measurements can be made independent of impact direction.

- Leeb principle, portable rebound hardness tester
- Hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb HLD
- Test results appear directly on the display
- Impact Device D integrated: no cables
- Tests at any angle, even upside down
- Bright LCD display
- Battery capacity on display
- Rechargeable Li-on battery
- Simple handling and low test expenditure



STANDARD DELIVERY

- Instrument with integrated impact device, type D
- Hardness test block with HLD value
- Coupling paste
- Support ring small
- Charger
- Cleaning brush
- INNOVATEST® certificate
- Manual
- Carrying case

TECHNICAL SPECIFICATIONS

Standard impact device	D integrated
Hardness scales	HRC, HRB, HV, HB, HS & HLD
Measuring range / materials	See table
Accuracy	±6HLD
Output	No
Min. surface roughness of workpiece	1.6µm (Ra)
Max. workpiece hardness	960HLD
Min. radius of workpiece	Rmin= 50mm (convex/concave) (with support ring Rmin= 10mm)
Min. workpiece weight	2-5kg on stable support 0.05-2kg with compact coupling
Min. workpiece thickness coupled	5mm
Min. thickness of hardened layers	0.8mm
Charging time	3 hours
Continuous working time	> 8 hours
Power	Rechargeable Li battery
Operating temperature	0°C to 40°C
Overall dimensions	145mm × 35mm × 30mm
Weight	110gr

OPTIONAL ACCESSORIES

- UKAS Reference hardness blocks
- Type Z10-15, for testing cylindrical outside surface R10~R15
- Type Z14.5-30, for testing cylindrical outside surface R14.5~R30
- Type Z25-50, for testing cylindrical outside surface R25~R50
- Type HZ11-13, for testing cylindrical inside surface R11~R13
- Type HZ12.5-17, for testing cylindrical inside surface R12.5~R17
- Type HZ16.5-30, for testing cylindrical inside surface R16.5~R30
- Type K10-15, for testing spherical outside surface SR10~SR15
- Type K14.5-30, for testing spherical outside surface SR14.5~SR30
- Type HK11-13, for testing spherical inside surface SR11~SR13
- Type HK12.5-17, for testing spherical inside surface SR12.5~SR17
- Type HK16.5-30, for testing spherical inside surface SR16.5~SR30
- Type UN, for testing cylindrical outside surface, radius adjustable R10~∞

ORDER DETAILS

TH-1100 Portable dynamic hardness tester

MEASURING RANGE

Material	HLD	HRB	HRC	HB	HV	HS
Steel & cast steel	300-900	38.4-99.8	20-68.4	81-654	81.1-955	32.5-99.5
Cold work tool steel	300-840		20.4-67.1		80-898	
Stainless steel	300-800	46.5-101.7	19.6-62.4	85-655	85-802	
Gray cast iron	360-650			93-334		
Nodular cast iron	400-660			131-387		
Cast alumumium	200-570	23.8-34.6		26.8-164		
Brass	200-550	13.5-95.3		40-173		
Bronze	300-700			60-290		
Copper	200-690			45-315		
Wrought steel				143-650		

TH-150
IMPACT DEVICE D

TH-152
IMPACT DEVICE C

TH-154
IMPACT DEVICE DL

FEATURES

The TH-150 series part of the unbeatable range of TIME Leeb type dynamic hardness testers offer a trendy design and affordable, but accurate hardness testing solution for on-site testing in workshops and in field operation.
The unit assures accurate and reliable hardness measurement. (standardized according to ASTM A956)

Most metallic products with a minimum solid mass of 2kg can be tested according to the Leeb principle.
The display shows hardness values in all common scales, such as HRC, HRB, HV, HB, HS, and HLD.
The instrument is equipped with replaceable batteries that provide as much as 300 hours of continuous operation.

- Leeb principle, portable rebound hardness tester
- Hardness values in Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb HLD
- Test results appear directly on the display
- Impact Device D integrated: no cables
- Tests at any angle, even upside down
- Bright LCD display
- Battery capacity on display
- Rechargeable Li-on battery
- Simple handling and low test expenditure

TECHNICAL SPECIFICATIONS

Hardness parameter	HRC, HRB, HV, HB, HS, HL
Impact Device integrated	D (TH-150) C (TH-152) DL (TH-154)
Accuracy	Within ±6HLD (TH-150), Within ±12HLC (TH-152), Within ±12HLDL (TH-154)
Memory	256 average readings
Output	RS-232
Min. Surface roughness of workpiece	1.6µm (Ra) (TH-150/154) or 0.4µm (Ra) (TH-152)
Needle front section of DL-device (TH-154)	Diameter= 4.2mm Length= 50mm
Workpiece max. hardness value	940HV (TH-150), 1000HV (TH-152) or 950HV (TH-154)
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workpiece minimum weight	2kg-5kg on solid support (TH-150/154) 0.05kg-2kg with coupling paste 0.5-1.5kg on solid support (TH-152) 0.02-0.5kg with coupling paste
Workpiece min. thickness coupled	5mm (TH-150/154) or 1mm (TH-152)
Workpiece min. case hardened depth	0.8mm (TH-150/154) or 0.2mm (TH-152)
Indentation depth	See Impact devices data
Continuous working time	300 h (without backlight)
Power	Battery Lithium 3V, CR½AA
Operating temperature	0°C to 40°C
Overall dimensions	Body diameter oval 60mm/39mm 149mm x 60mm x 39mm (TH-150/152) 213mm x 60mm x 39mm (TH-154)
Weight	150gr (TH-150/152), 170gr (TH-154)

ORDER DETAILS

TH-150 Dynamic metal tester with integrated impact device D
TH-152 Dynamic metal tester with integrated impact device C
TH-154 Dynamic metal tester with integrated impact device DL

STANDARD DELIVERY

- Instrument with integrated impact device type; D (TH-150), C (TH-152) or DL (TH-154)
- Hardness test block with HLD-value (TH-150), HLC value (TH-152) or HLDL value (TH-154)
- Cleaning brush
- Coupling paste
- Battery Lithium 3V, CR½AA
- Communication cable
- Small support ring
- INNOVATEST® certificate
- Manual
- Carrying case

OPTIONAL ACCESSORIES

- UKAS Reference hardness testblocks
- Support rings for convex, concave and spherical surfaces (only TH-150/152) (see page 93)
- Printer TA-230

SUPPORT RINGS

HARDNESS TEST BLOCK

TA-230 PRINTER

PORTABLE HARDNESS TESTER — IMPACT TH-170 SERIES

TH-170
IMPACT DEVICE D

TH-172
IMPACT DEVICE C

TH-174
IMPACT DEVICE DL

FEATURES

The world famous IMPACT™ series, part of the unbeatable series of TIME dynamic Leeb hardness testers offer very affordable, but accurate hardness testing solution for on-site testing in workshops and in field operation. The units assure accurate and reliable measurement. All results and statistics can be directly printed to the optional compact fast thermal printer. Any metallic products with a minimum solid mass starting from 0.5kg can be tested according to the Leeb principle. The display shows hardness values in all common scales, such as HRC, HRB, HV, HB, HS, and HLD.

The instrument is equipped with replaceable batteries providing 16 hours continuous operation.

- Dynamic rapid hardness test procedure
- TH-170 Impact device D integrated
- TH-172 Impact device C applying low impact energy for surface hardened components and thin walled components
- TH-174 Impact device DL for testing in confined spaces
- Wide measuring range
- Direct display of hardness Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb HL
- For most metallic materials
- Automatic gravity compensation for testing at any angle
- Simple handling and low test expenditure
- High accuracy ±0.5%
- Clear LCD display showing all functions and parameters
- Conforms to ASTM A 956 and DIN 50156

TECHNICAL SPECIFICATIONS

Hardness parameter	HRC, HRB, HV, HB, HS, HL
Accuracy	Within ±6HLD (TH-170) Within ±12 HLC (TH-172) Within ±12HLDL (TH-174)
Statistics	Average (max. 270 in 9 groups)
Output	USB
Min. Surface roughness of workpiece	1.6µm (Ra) (TH-170/174), 0.4µm (Ra) (TH-172)
Impact device integrated	D (TH-170) C (TH-172) DL (TH-174)
Needle front section of DL-device (TH-174)	Diameter = 4.2mm Length = 50mm
Max. hardness value	940HV (TH-170) 1000HV (TH-172) 950HV (TH-174)
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Workpiece minimum weight	2kg - 5kg on solid support (TH-170/174) 0.05kg - 2kg with coupling paste 0.5 - 1.5kg on solid support (TH-172) 0.02 - 0.5kg with coupling paste
Workpiece min. thickness coupled	5mm (TH-170/174); 1mm (TH-172)
Workpiece min. case hardened depth	0.8mm (TH-170/174), 0.2mm (TH-172)
Indentation depth	See page: Impact devices data
Continuous working time	150 h (without backlight)
Power	Batteries AAA (2 pcs)
Operating temperature	0°C to 40°C
Overall dimensions	155mm x 24mm x 55mm (TH-170/172) 210mm x 24mm x 55mm (TH-174)
Weight	180gr (TH-170/172) or 200gr (TH-174)

ORDER DETAILS

TH-170 Dynamic hardness tester with integrated impact device D
TH-172 Dynamic hardness tester with integrated impact device C
TH-174 Dynamic hardness tester with integrated impact device DL

STANDARD DELIVERY

- Instrument with integrated impact device type D, C or DL
- Hardness test block with HLD-, HLC- or HLDL-value
- AAA Batteries (2pcs)
- Cleaning brush
- Coupling paste
- Support ring small
- USB communication cable
- USB driver cd
- INNOVATEST® certificate
- Manual
- Carrying case

OPTIONAL ACCESSORIES

- UKAS Reference hardness blocks
- Support rings for convex, concave and spherical surfaces (only TH-170/172) (see page 93)

SUPPORT RINGS

HARDNESS TEST BLOCK

PORTABLE HARDNESS TESTER — ROCKY TH-110

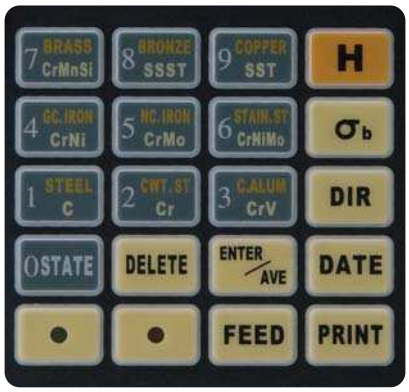
ROCKY TH-110
PORTABLE HARDNESS TESTER WITH BUILT-IN PRINTER

FEATURES

The year 1989, the first TIME Leeb portable hardness tester ROCKY HLN11A was presented to the market. Yet, the new generation of this high quality, popular hardness tester is still the best selling Leeb tester world wide. Often copied, but never equalled, the TH-110 is the 3rd generation of the ROCKY dynamic Leeb hardness testers.
(standardized according to ASTM A956)
Most metallic products with a minimum solid mass starting from 0.5kg can be tested according to the Leeb principle. The display shows hardness values in all common hardness scales.

The instrument is equipped with re-chargeable batteries providing over 16 hours continuous operation.

- Test results appear directly on the large display
- According to ASTM and DIN standards
- Display scales HRC, HRB, HV, HB, HS and conversion to tensile strength
- Highly accurate readings ±6HLD
- Correction for impact direction 360 degrees
- Chargeable battery pack to ensure many hours of undisturbed testing and printing
- Direct keys for easy set up of testing parameters
- Mini-printer installed on the main unit
- Ridged ABS anti-shock casing with sealed keypad



STANDARD DELIVERY

- Instrument with impact device type D
- Printer (on top)
- Hardness test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Support ring small
- INNOVATEST® certificate
- Manual
- Carrying case

OPTIONAL ACCESSORIES

- Special impact devices (see overview on page 102/103)
- UKAS Reference hardness blocks
- Support rings for convex, concave and spherical surfaces (see page 93)

TECHNICAL SPECIFICATIONS

Hardness parameter	HL, HRB, HRC, HV, HB, HS
Tensile strength U.T.S.	σb from 374 to 2652 range (steel only)
Accuracy	Within ±6HLD
Printer	Printer showing all test results and settings
Statistics	Average value
Impact device	D (standard)
Optional impact devices	DC/D+15/DL/G/C
Max. hardness value	940HV-1000HV
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. Workpiece weight	2-5kg on stable support 0.05-2kg with compact coupling except C and G impact device
Workpiece min. thickness coupled	5mm (except with impact device G: 10mm, C: 1mm)
Workpiece min. case hardened depth	0.8mm, except C impact device 0.2mm and G impact device 1.2mm
Power	Rechargeable NiMh battery pack
Charger	12V, 600mA (1.8VA)
Charging time	2.5 - 4 hours
Operating temperature	0°C to 40°C
Overall dimensions	235mm x 90mm x 47mm
Weight	615gr (incl. impact device and printer)

SUPPORT RINGS

HARDNESS TEST BLOCK

ORDER DETAILS

TH-110/D Portable hardness tester with built-on printer and external D probe

PORTABLE HARDNESS TESTER — ROCKY TH-160

ROCKY TH-160
PORTABLE HARDNESS TESTER WITH BUILT-IN PRINTER

FEATURES

Modern, high-end, variant of the ROCKY TH-110 with additional features. Easy operating due to intuitive menu system. Fast, super silent built-in printer.

- Large memory for 1000 tests
- Auto-recognition of connected Impact Device
- Auto-recognition and gravity compensation of Impact Device test direction
- Statistical data and upper-lower limit setting
- Prints all test results and histogram
- RS-232 interface (to hyperterminal)
- Time and date setting
- Back-light LCD
- Direct display of hardness scales Rockwell HRB, HRC, Vickers HV, Brinell HB, Shore HS, Leeb HL
- Conversion to tensile strength σb (U.T.S.)
- For all metallic materials
- Impact device provides testing at any angle, even upside down
- Integral thermal printer
- High accuracy ±6HLD and conforms to ASTM A 956
- Six impact devices are available for special applications (see following pages)

TECHNICAL SPECIFICATIONS

Hardness parameter	HL, HRC, HRB, HV, HB, HS
Tensile strength U.T.S. range (steel only)	σb from 374 to 2652
Accuracy	Within ±6HLD
Functions	Auto-recognition of connected impact device and probe test direction, auto-conversion to other hardness scales
Memory	1000 test maximum
Data-output	RS-232 to Hyperterminal (MS)
Printer	Thermal printer showing all test results, settings and histogram
Statistics	Average value, min-max, upper-lower limits
Impact device	D (standard)
Optional impact devices	DC/D+15/DL/G/C (see next page)
Max. hardness value	940HV-1000HV
Workpiece radius (convex/concave)	Rmin = 50mm (with support ring Rmin= 10mm)
Min. Workpiece weight	2-5kg on stable support 0.05-2kg with compact coupling except C and G impact device
Workpiece min. thickness coupled	5mm, except with impact device G: 10mm, C: 1mm
Workpiece min. case hardened depth	0.8mm, except C impact device 0.2mm and G impact device 1.2mm
Indentation depth	See following page: Impact devices data
Power	Rechargeable Li battery, 6V (1 pc)
Charger, charging time	6V, 500mA (1.8VA), 2.5 - 4 hours
Operating temperature	0°C to 40°C
Overall dimensions	230mm x 90mm x 47mm
Weight	420gr (including impact device and printer)

STANDARD DELIVERY

- Instrument with impact device type D
- Printer (on top)
- Hardness test block with HLD-value
- Charger
- Cleaning brush
- Coupling paste
- Support ring small
- RS-232 communication cable
- INNOVATEST® certificate
- Manual
- Carrying case

OPTIONAL ACCESSORIES

- Special impact devices (see overview on page 102/103)
- UKAS Reference hardness blocks
- Support rings for convex, concave and spherical surfaces (see page 93)

SUPPORT RINGS

HARDNESS TEST BLOCK

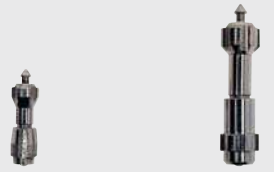
ORDER DETAILS

TH-160/D Portable hardness tester with built-on printer, external D probe, statistics and RS-232 output

IMPACT DEVICES FOR SPECIAL APPLICATIONS

IMPACT DEVICE G

- Special feature:
  Enlarged test tip, increased impact energy (approximately 9 times that of type D) Low demands on measuring surface finish.
  For measurements in the Brinell range only (max. 650 HB)
- Application:
  Solid components, e.g. heavy castings and forgings.



IMPACT BODY D | IMPACT BODY G

IMPACT DEVICE D

- Special feature:
  Universal standard unit.
- Application:
  For the majority of hardness testing assignments.

IMPACT DEVICE C

- Special feature:
  Reduced impact energy (approximately 1/4 of type D).
- Application:
  Surface hardened components, coatings, thin walled or impact sensitive components (small measuring indentation).

D | C | DC

IMPACT DEVICE DC

- Special feature:
  Extremely short impact device. Spring loaded with a special loading stick. Otherwise as for type D.
- Application:
  Use in very confined spaces, e.g. in holes, cylinders or for internal measurements on assembled machines.

IMPACT DEVICE D+15

- Special feature:
  Particularly slim front section and with measuring coil moved back.
- Application:
  Hardness measurements in grooves and on recessed surfaces.

IMPACT DEVICE DL

- Special feature:
  Needle front section ø4.2mm, length 50mm.
- Application:
  Measurements in extremely confined spaces

D+15 | DL | G

IMPACT DEVICES FOR SPECIAL APPLICATIONS TH-110/160 SERIES

TECHNICAL SPECIFICATIONS

Impact devices	D/DC/DL	D+15	C	G
• Impact energy	11 Nmm	11 Nmm	3 Nmm	90 Nmm
• Mass of impact body	5.5gr DL: 7.2	7.8gr	3.0gr	20gr
Test tip				
• Hardness	1600HV	1600HV	1600HV	1600HV
• Diameter	3mm	3mm	3mm	5mm
• Material	Tungsten carbide	Tungsten carbide	Tungsten carbide	Tungsten carbide
Impact body				
• Diameter	20mm	20mm	20mm	30mm
• Length	147/86mm	162mm	141mm	254mm
• Weight	75/50gr	80gr	75gr	250gr
Max. hardness of sample	940HV	940HV	1000HV	650HB
Preparation of surface				
• Roughness class ISO	N7	N7	N5	N9
• Max. roughness depth Rt	10µm	10µm	2.5µm	30µm
• Average roughness Ra	2µm	2µm	0..4µm	7µm
Min. weight of sample				
• Of compact shape	5kg	5kg	1.5kg	15kg
• On solid support	2kg	2kg	0.5kg	5kg
• Coupled on plate	0.05kg	0.05kg	0.02kg	0.5kg
Min. thickness of sample				
• Coupled	5mm	5mm	1mm	10mm
• Min. thickness of hardened layers	0.8mm	0.8mm	0.2mm	1.2mm

INDENTATION OF TEST TIP

Impact devices	D/DC/DL	D+15	C	G
With 300 HV				
• Diameter	0.54mm	0.54mm	0.38mm	1.03mm
• Depth	24µm	24µm	12µm	53µm
With 600 HV				
• Diameter	0.54mm	0.54mm	0.32mm	0.90mm
• Depth	17µm	17µm	8µm	41µm
With 800 HV				
• Diameter	0.35mm	0.35mm	0.35mm	-
• Depth	10µm	10µm	7µm	-

DYNAMIC TH-180
WIRELESS PORTABLE HARDNESS TESTING STATION

FEATURES

The TH-180 is a versatile portable hardness testing instrument, combining dynamic Leeb rebound testing technology with wireless data processing. Part of the family of the world famous TIME TH series portable testing instruments, the TH-180 is the top of the range and allows the user to move freely around the workpiece without being limited or hindered by cables.

In the TH-180, today's wireless technology has been combined with over 20 years of know-how in the portable hardness testing field. According to DIN Standard 50156 and ASTM A 956.

- Hand-held device with a rugged shock-resistant housing
- Large and clear display with adjustable contrast and backlight
- Converts directly to HV, HB, HRC, HRB, HRA, HS
- Highly accurate ± 4 HL (0.5% at 800 HL) with automatic correction for impact direction
- Wide measurement range
- Simple operating menu structure and extensive on-screen help files
- Internal storage up to 2500 batches of data
- Wireless Impact device D stores over 500 groups of data
- Wired Impact device D included in standard delivery
- Down-/upload data from/to PC via USB, Ethernet or RS-232
- The main unit works with different kind of wireless slave units, such as impact device Dw, Cw and DLw
- The data of the slave unit is transferred to the main unit via bi-directional wireless communication.

FEATURES

Main unit:

- Large full color touch screen operation (320 x 240 matrix) backlit display
- Memory for up to 2500 data groups
- Upper or lower limits hardness settings, both visual and acoustic warning in case of exceeded test values
- Fast & silent thermal printer, prints all test data of the main unit and slave unit
- Six wired impact devices are available for special applications, no need for calibration when impact device is replaced
- Automatic identification of impact device and test direction
- Stand-alone working mode and wireless system working mode

Slave unit:

- Automatic transfer of impact device ID and test direction
- Matrix LCD display
- Wireless technology for communication with main unit. Can be used as stand alone instrument (See details of TH-1100)
- Stores readings and displays average test value
- Rechargeable Li-on battery

TECHNICAL SPECIFICATIONS

Measuring range	170 - 960 HLD
Highly accurate	± 4 HL (0.5% at 800 HL)
Testing direction	360°
Hardness scale	HL, HRB, HRA, HB, HRC, HV, HS
Memory	2500 groups data in main unit 500 groups transferred data from slave units
Limit setting	170 - 960 HLD
Charging time	6h (main unit), 2.5h (slave unit)
Power	12V/4A (main unit) 6V/400mA (slave unit)
Continuous working time	12h (main unit), 50h (slave unit)
Relative humidity	90%
Environment temperature	0°C to 40°C
Dimensions	260mm x 170mm x 57mm (main unit) 145mm x 35mm x 30mm (slave unit)
Weight	1070gr (main unit), 120gr (slave unit)

ORDER DETAILS

TH-180/D Dynamic wireless hardness testing station with external D probe

STANDARD DELIVERY

- Main unit
- D remote unit
- D impact device
- Type Z14.5-30, for testing cylindrical outside surface R14.5~R30
- Type HZ12.5-17, for testing cylindrical inside surface R12.5~R17
- Type K14.5-30, for testing spherical outside surface SR14.5~SR30
- Type UN, for testing cylindrical outside surface, radius adjustable R10~∞
- Cleaning brush
- Hardness test block HLD
- Coupling paste
- Charger for main unit
- Charger for D unit
- INNOVATEST® certificate
- Manual
- Carrying case

OPTIONAL ACCESSORIES

- Support rings for convex, concave and spherical surfaces (see page 93)
- Impact device, C, DC, D+15, DL, G
- Reference hardness blocks
- DL and/or C remote unit

IMPACT DEVICES

PORTABLE HARDNESS TESTER — INSTRUMATIC

INSTRUMATIC
ANALOGUE PUSH TYPE PORTABLE HARDNESS TESTER

FEATURES

The large clearly marked dials on this type of instruments covers a full range of hardness values in Vickers, Brinell, Rockwell A, B, C, and Kp/mm² according to the British, American and German specifications.

The instrument
The system is entirely mechanical employing the use of special preloaded springs which provide a load of about 15kg to the diamond. Maximum penetration of the diamond into the specimen is 0.125mm (.005").

Operation and use
The simplicity of the tester enables it to be used in almost any direction, (preferably vertically), without affecting accuracy. It can be used 'on site'. The grips are depressed to the fullest extent by using the palms of the hands and the hardness value can be read off the appropriate scale.

- **Diamond indentor**
  The instrument does not require any regular servicing. Should the diamond indentor become damaged, a new indentor can simply be fitted using the small tool supplied with the instrument.

- **Precision bench stand**
  Bench stand with vee base for round parts, available as an option.

TECHNICAL SPECIFICATIONS

Code No.		Scale	Range
POR0001	No 1	Vickers Pyramid	100 - 1000
		Brinell	100 - 500
		Rockwell C	20 - 70
POR0002	No 2	Rockwell A	40 - 85
		Rockwell B	50 - 100
		Rockwell C	20 - 70
POR0003	No 3	Vickers Pyramid	100 - 1000
		Brinell	100 - 400
		Rockwell B	50 - 99
		Rockwell C	20 - 70
POR0004	No 4	kg/mm²	35 - 140
		Brinell	100 - 400
		Rockwell B	50 - 99
		Rockwell C	20 - 70
POR0005	No 5	Vickers Pyramid	40 - 300
		Brinell	40 - 300
POR0006	No 6	Brinell	40 - 300
		Vickers Pyramid	40 - 300
POR0007	No 7	Brinell	100 - 600
POR0008	No 8	Vickers Pyramid	20 - 106
PBS0001		Precision bench stand	

ORDER DETAILS

INSTRUMATIC Fully mechanical instrument with various scales available

PBS0001 Precision bench stand (optional)

STANDARD DELIVERY

- Instrument
- UKAS Reference hardness block
- Case
- Adjuster key
- INNOVATEST® certificate
- Manual

OPTIONAL ACCESSORIES

- Adjuster bush
- Spare plastic box
- Spare diamond indentor
- Precision bench stand

RANGEMASTER
DIGITAL PUSH TYPE PORTABLE HARDNESS TESTER

FEATURES

Digital version of the world famous INSTRUMATIC push type hardness tester.
The Rangemaster plus has an advanced electronic read-out system to make reading correct hardness values an easy task.

- Dynamic test indicator
- Large digital readout
- Hardness values in all major international scales with simple conversion facilities from one to the other
- RS-232 output for connection to PC or serial printer
- Memory storage capacity for in excess of 400 readings
- Statistical summary
- Integral icon facility provides operator with easy visual identification of mode in which unit is operating
- Operates in temperatures from -5°C to +35°C
- Upper and lower control limits
- Last reading recall

TECHNICAL SPECIFICATIONS

Model	Rangemaster	
Hardness Scale	Vickers Pyramid No., Brinell, Rockwell B, Rockwell, Tensile Strength, Shore Scleroscope	
Testing Range	Vickers Pyramid No.	35 – 1000
	Brinell	100 – 500
	Rockwell B	30 – 100
	Rockwell C	20 – 70
	Tensile Strength	255 – 1999 N/mm²
	Shore Scleroscope	24 – 97
Resolution	1	Vickers Pyramid No., Brinell, Tensile Strength, Shore Scleroscope
	0.1	Rockwell B, Rockwell C
Power	9V battery or adaptor	
Output	RS-232 serial output	

TECHNICAL SPECIFICATIONS

Model	C (ROC0001) B (ROC0002)
Scale	HRC 20-70 (ROC0001) HRB 30-100 (ROC0002)
Power	9V battery or adaptor
Output	RS-232 serial output

STANDARD DELIVERY

- Instrument
- UKAS Reference hardness blocks
- Carrying case
- Adjuster key
- INNOVATEST® certificate
- Manual

OPTIONAL ACCESSORIES

- Precision bench stand
- Communication cable
- Software

ORDER DETAILS

RAN0001 Rangemaster
ROC0001 Rockmaster C
ROC0002 Rockmaster B
PBS0001 Precision bench stand (optional)

REFERENCE HARDNESS BLOCK

PORTABLE HARDNESS TESTER — BARCOL INBC-01

BARCOL INBC-01
IMPRESSOR

FEATURES

Portable indentation hardness tester.
Used to test the hardness of all kinds of aluminum, from very soft aluminum to very hard aluminum alloys.

Single hand operation; no real operating experience required; can test any flat surface.
Wide testing range equivalent to Brinell hardness 25-150HBW.
Extended application. Model INBC-01 is applied to test the hardness of aluminum, aluminum alloys, copper, copper alloys, fiber reinforced plastics and rigid plastics etc.

High sensitivity.
Featured with 100 segments scale, much more sensitive than Webster hardness testers applied in aluminum alloys industry.

No need to move or support the workpiece. Used to test super large and thick workpieces and assembly parts.

Complies to ASTM B648-2000.

Easy conversion.
The test results can be converted to HB, HR, HV and HW through a conversion table supplied with the instrument.

TECHNICAL SPECIFICATIONS

Indentor	26°panhead cone, Head face diameter 0.176mm
Testing range	0-100HBa equivalent to 25-150HBW
Resolution	0.5HBa
Indication error	Hardness range 42-52HBa ±2HBa Hardness range 84-88HBa ±1HBa
Repeatability error	Hardness range 42-52HBa ±2HBa Hardness range 84-88HBa ±1HBa
Weight	0.5kg

STANDARD DELIVERY

- Instrument
- Spare indentors (2 pcs)
- High value Standard hardness plate
- Low value Standard hardness plate
- Calibration wrench
- Supporting foot
- Carrying case

OPTIONAL ACCESSORIES

- Spare indentors
- Hardness test plates

ORDER DETAILS

INBC-01 Barcol impressor

MAGNETIC ROCKWELL INMR-01

MAGNETIC ROCKWELL INMR-01
PORTABLE ROCKWELL HARDNESS TESTER

FEATURES

Magnetic base hardness tester designed according to the principle of Rockwell hardness testing.

The test head can be fixed to the surface of iron and steel components by magnetic force.
Support to the test piece is not required as the 350kg+ magnetic base will hold the unit firmly in position.

The testing accuracy complies to ISO6508 or ASTM E18 and is comparable to a Rockwell bench hardness tester.

Testing can be done regardless of the shape of the component as long as there is a flat surface for positioning of the magnetic base.

Able to test large-size workpieces which are assembled, unable to cut or inconvenient to move such as the large-size moulds, steel plate, steel tube, steel structure, boiler, pressure vessel, metallic pipe lines or the slide ways of machine tools.

TECHNICAL SPECIFICATIONS

Initial test force	10kg
Rockwell test force	60kg, 100kg or 150kg
Indentor	120°diamond cone 1.588mm carbide ball
Force applying method	By screw
Maximum magnetic force	>350kg
Test range	Rockwell hardness HRC, HRB, HRA etc. 15 scales
Resolution	Rockwell hardness 0.5HR
Accuracy	In accordance with ISO6508
Minimum specimen size	60mm × 180 mm
Net weight	4.9kg
Package gross weight	7.4kg

STANDARD DELIVERY

- Instrument with magnetic base
- Rockwell diamond indentor
- Rockwell ball indentor
- Adjuster key
- Packed in solid alu-case
- INNOVATEST® certificate
- Manual

OPTIONAL ACCESSORIES

- Rockwell indentors
- Rockwell balls

ORDER DETAILS

INMR-01 Rockwell hardness tester

WEBSTER PORTABLE HARDNESS TESTERS WH100

WEBSTER WH100
MECHANICAL SHEET & STRIP METAL HARDNESS TESTER

FEATURES

The INNOVATEST® WH Series hand operated **Webster** Hardness Testers are portable instruments which can perform on-site hardness testing on aluminum alloys, brass, copper and soft steel. A quick and easy test, the hardness value can be read out directly on the indicator, with a simple clamp. The measuring procedure complies to the American Standard ASTM B647. Suitable for testing aluminum alloy profiles, tubings and sheet materials. Especially suitable for a fast, non destructive quality inspection on the production site.

The WH Series hand operated **Webster** Hardness Testers feature a fast and comprehensive testing method for testing thin, soft materials. There are several models available for different applications and with different measuring capacity. The Webster hardness values can be converted into the commonly used Vickers, Rockwell and Brinell hardness values. Each tester is packed in a strong industrial box including all standard delivery such as a set of tools, a hardness standard, and a spare indentor.

- One hand operation and portability
- Variety of anvils permits testing a great variance of shapes
- Simple operation permits readings independent of the operator's skill
- Test is made by simply applying pressure to the handles until "bottom" is felt
- Easy-to-read dial indicator with 20 graduations permits use of the tester as "Go" and "No Go" gauge
- Standard hardness gauge tests materials up to 13mm in thickness

TECHNICAL SPECIFICATIONS

Measuring scope	0-20HW
Accuracy	0.5HW
Net weight	0.5kg
Package gross weight	1.55kg
Package dimensions	330mm × 255mm × 150mm

STANDARD DELIVERY

- Instrument
- Standard hardness plate
- Spare indentor
- Calibration wrench
- Small screwdriver
- Carrying case
- INNOVATEST® certificate
- Installation & user manual

OPTIONAL ACCESSORIES

- Standard hardness plates

MODEL SELECTION & ORDER DETAILS

WH100	Material	Aluminum alloy
	Hardness range	25-110HRE, 58-131HV
	Workpiece thickness	Max. 6mm
	Workpiece inner diameter	Min. 10mm
WH110	Material	Aluminum alloy
	Hardness range	25-110HRE, 58-131HV
	Workpiece thickness	Max. 13mm
	Workpiece inner diameter	Min. 10mm
WH120	Material	Aluminum alloy
	Hardness range	25-110HRE, 58-131HV
	Workpiece thickness	Max. 8mm
	Workpiece inner diameter	Min. 6mm
WH130	Material	Brass in hard half hard state super-hard, aluminum alloy
	Hardness range	63-105HRF
	Workpiece thickness	Max. 6mm
	Workpiece inner diameter	Min. 10mm
WH140	Material	Brass in hard half hard state super-hard, aluminum alloy
	Hardness range	63-105HRF
	Workpiece thickness	Max. 8mm
	Workpiece inner diameter	Min. 6mm
WH150	Material	Soft brass pure copper
	Hardness range	18-100HRE
	Workpiece thickness	Max. 6mm
	Workpiece inner diameter	Min. 10mm
WH160	Material	Soft brass pure copper
	Hardness range	18-100HRE
	Workpiece thickness	Max. 8mm
	Workpiece inner diameter	Min. 6mm
WH170	Material	Cold-rolled steel sheet stainless steel
	Hardness range	48-100HRB
	Workpiece thickness	Max. 8mm
	Workpiece inner diameter	Min. 6mm

PORTABLE BRINELL HARDNESS TESTER SET HB1500

HB1500
RIGID PORTABLE BRINELL HARDNESS TESTER SET

FEATURES

- Solid fine finished C-frame
- Easy to operate, also under difficult and harsh conditions
- Tolerance of test force <0.5%
- Test force is controlled by a shear pin
- Two types of application: C clamp and hammer impact
- Suitable for assemblies inconvenient to be taken to the lab and not allowed to be cut
- Accuracy is much higher than any other type hammer impact tester
- Used to test the hardness of forgings, castings, steels, nonferrous metal and its alloy products, and to test the hardness of annealed, normalizing and tempered mechanical parts.

GENERAL INFORMATION

The HB1500 Portable hardness tester is designed for the Brinell hardness test method. The test force is controlled by calibrated shear pins.
After reading the diameter of the indentation with the analogue microscope, the Brinell hardness number can be obtained from the lookup table. Simple and easy to use.

The HB1500 has two types of application: C clamp or hammer impact.
It is possible to test small to very large specimens.
The unit in particular is suitable for assemblies that are inconvenient to be taken to the lab or which cannot be cut in smaller parts.
The test can be completed in any direction.

The test head itself can be used as a hammer impact tester, where the shear pin will limit the applied force. Therefore its accuracy is much higher than any other type hammer impact tester. Brinell hardness testing, with a testing force of 1580kg, indentor diameter of 7.26mm, then F/D2=30. The test applied by the hydraulic HB1500 is equivalent to the standard Brinell hardness test with 3000kgf and a 10mm ball indentor.

The tester can be widely used to test the hardness of forgings, castings, steel samples, nonferrous and alloyed metals.

STANDARD DELIVERY

- Instrument
- Steel ball indentor
- Flat anvil
- V-anvil
- Brinell standard hardness test block
- Holding handle
- Pin removal tool
- Pack of shear pins (250 pieces)
- Impact cylinder
- Reading microscope 20x
- Rubber protective caps
- Carrying case

OPTIONAL ACCESSORIES

- Carbide ball indentor
- Brinell reference hardness blocks
- Shear pins (a pack of 250pcs)
- Hemispherical spot anvil (used for testing tubing or curled specimens)
- Small flat anvil (used for testing small specimens)
- 40x reading microscope
- 3 lb hammer

TECHNICAL SPECIFICATIONS

Test force	1580kg	
Tolerance of test force	<0.5%	
Accuracy	In accordance with ISO 6506	
Indentor	7.26mm steel spherical surface indentor (range: 100-400HB) 4.0mm carbide spherical surface indentor (Optional) (range: 400-650HB)	
Opening size	150mm x 100mm (H×D)	
Net weight	C clamp	4.2kg
	Hammer impact	0.8kg

ORDER DETAILS

HB1500 Portable Brinell Hardness tester set

PORTABLE BRINELL HARDNESS TESTER HB120

HB120
PORTABLE BRINELL HARDNESS TESTER

FEATURES

- Permanence Impression can be checked and rechecked anytime
- Accuracy Calibrated to 0.5 of 1% of load;
  Can be used for higher loads up to 3000kg;
  Breaks through surface heat treatment to get to the core of the material
- Versatility Can be used in virtually any position; right-side up, upside down or sideways
- Durability Some portable Brinell testers have been working over 60 years

- **Standard test head**
  Calibrated accurate to 1/2 of 1% load. Releases at 3000kg automatically. Capable of incremental loads.
- **Standard test head with long ram**
  Same features as standard test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges.
- **Low pressure test head**
  Applied load and indicator dial are coordinated for softer metals. Can be calibrated to release at loads of 62-1/2kg, 125kg, 250kg, 500kg, or 1000kg.
- **Low pressure test head with long ram**
  Same features as low pressure test head plus a long ram that puts impression head at end of 2" extension for easy access into recessed areas or over raised edges.
- **Adapter to hold test head upright without base**
  For testing large flats it enables test heads to be used under large drill presses, boring mills, arbor presses and beams that are capable of withstanding 3000kg load.
- **2.5mm and 5mm ball adapter**
  Used on softer materials or where a smaller impression is desired.
- **Chain adapter**
  Used for large cylinders it fits onto a standard test head and wraps around specimens that are too big for regular tester. High strength chrome/ molybdenum steel arms hold the chain to the test head and allow it to stay rigid while the chain takes the full thrust of the load. Supplied with 4" chain.
- **Base**
  14" base with 14" test height opening and 4" throat is standard. Optional 6" throat with either 14" or 20" test height opening available, 20" base also available with 4" throat and 20" test height opening.
- **Stage micrometer**
  Used to check calibration of Brinell Microscope by placing the microscope on the stage micrometer and aligning the grid on the stage micrometer with the grid on the microscope. If the grids doesn't match perfectly, the microscope is out of calibration and should be re-calibrated. Meets ASTM 50, and is traceable to NIST standards.
- **Brinell microscope**
  Constructed from stainless steel, the rugged and optically reliable Brinell microscope is the most versatile on the market today. Featuring a 20x pre-focused lens, the microscope has a narrow nosepiece which easily fits into tight recesses, resulting in less grinding on castings, billets and dies. For added stability when performing flat work, a slip-on base adapter is included. A side opening in the microscope allows plenty of natural light for viewing, and a cordless movable pen light can be used in dim conditions. Calibrated on equipment traceable to NIST standards, the Brinell microscope meets ASTM 5-10 specifications. It is ready to use and comes equipped with a handy storage case

ORDER DETAILS

HB120 Portable hydraulic system featuring Brinell indentations up to 3000kgf

PORTABLE ULTRASONIC HARDNESS TESTER MET-U1A

MET-U1A
ULTRASONIC HARDNESS TESTER, 15N TESTFORCE

FEATURES

The INNOVATEST MET-U1A differs completely from traditional hardness testers. Instead of measuring the size of the indentation of the test sample using a microscope, it uses a diamond indentor mounted on a vibrating rod that presses on the test surface at a fixed load and then measures its hardness by applying ultrasonic vibrations and analyzing its damping effect.

The technique is very reproducible which makes the MET-U1A a perfect tool for on-site measurements such as maintenance of large scale structures, vehicles, ships, steel towers, bridges, air planes. It is ideal for inspection of thin materials or difficult to get area such as crank shaft, gears and grooved areas.

- Hardness measurements of metals and alloys on standardized hardness scales:
  Rockwell (HRC), Brinell (HB), Vickers (HV) and Shore (HSD)
- Three additional scales H1, H2, H3 for calibration of selfdefined
  hardness scales/materials
- Rm scale for determination of tensile strength
- Typically suitable for components that are inaccessible for dynamic hardness testers (small articles, structures with thin walls, pipes, reservoirs, steel sheets etc.)
- Leaves no visible indent on the tested article surface (crankshafts necks, mirrored surface, knives)

TECHNICAL SPECIFICATIONS

Measuring principle	According to the UCI method (ultrasonic contact impedance principle)		
Measuring range	Rockwell C scale	HRC	20-70
	Brinell scale	HB	75-650
	Vickers scale	HV	75-1000
	Shore scale	HSD	23-102
	Tensile strength	MPa	378-1736
Reproducibility	Rockwell C scale	HRC	1.5
	Brinell scale	HB	10
	Vickers scale	HV	12
	Shore scale	HSD	2
	Tensile strength	MPa	5%
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)		
Display lighting	Available		
Display features	Hardness scale, measured value, number of measurement, operation mode, archival number, battery charge indication, Auto-off after 150 sec.		
Memory	100 readings, also stored when test is switched off		
Surface roughness	<Ra 2.5		
Convex/concave	>5mm		
Minimum specimen weight	>0.01kg		
Material thickness	Probe without position accessories >2mm Probe with position accessories >1mm		
Penetration depth	0.03mm average		
Probe operating life	±200000 measurement		
Measuring force	14.7 N		
Power supply	AC mains, V / Hz100-240 / 50-60 Batteries AA, 1.2V (4pcs) Consumed power <3.0VA		
Battery life	Without backlight 16 hours With backlight 8 hours		
Battery charging time	8 hours		
Transportation & storage temperature	-35°C ... +60°C		
Operating environment	Relative humidity 30% ... 80%		
Overall dimensions	Gauge 180mm x 80mm x 42.4mm Probe 160mm x 25mm x ø7mm		

ORDER DETAILS

MET-U1A Ultrasonic portable hardness tester

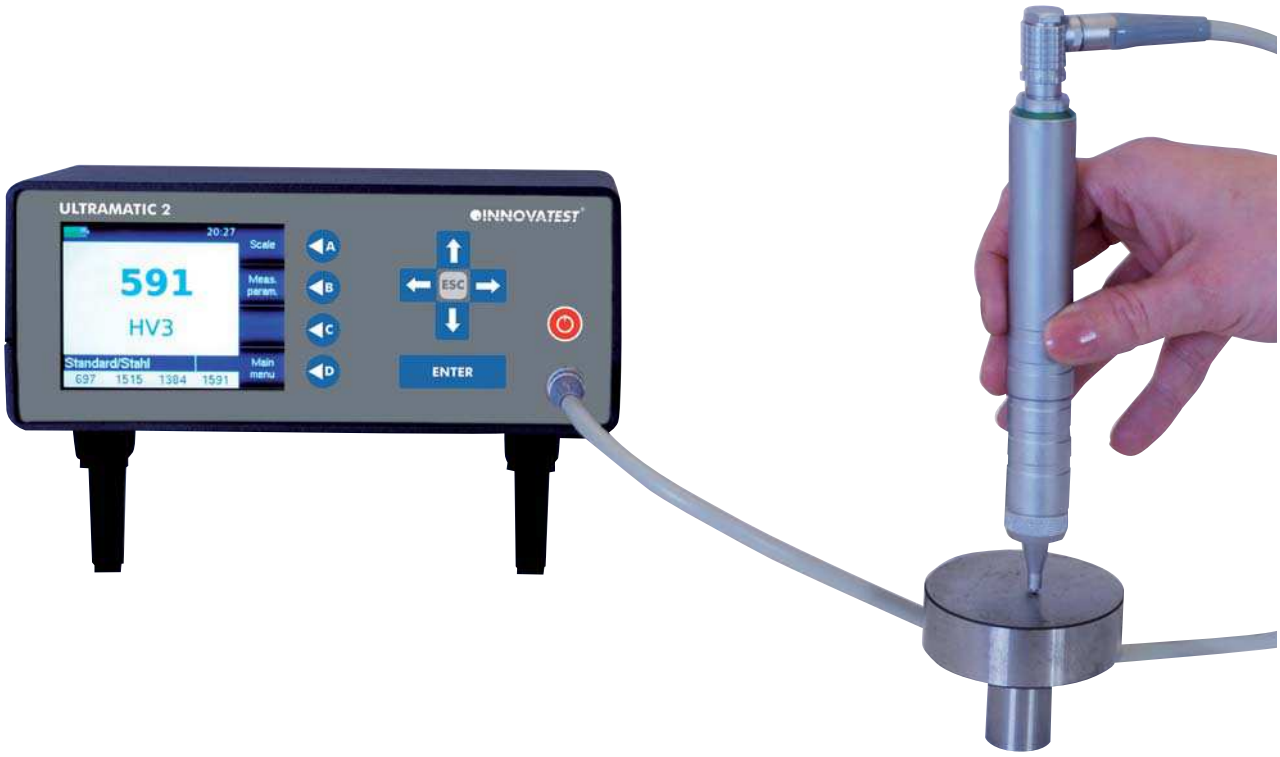
STANDARD DELIVERY

- Instrument
- U1 ultrasonic probe
- Power unit
- Batteries AA (4pcs) NiMh
- Carrying case
- INNOVATEST® certificate
- User and installation manual

OPTIONAL ACCESSORIES

- Reference hardness blocks
- Support V-anvil
- Probe stand

ULTRASONIC PORTABLE HARDNESS TESTER `ULTRAMATIC 2` HV400



ULTRAMATIC 2
ULTRASONIC HARDNESS TESTER

FEATURES

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 color display.

- Ultrasonic Contact Impedance test principle, fast, accurate, easy to use in confined spaces
- Full color 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 ±1%
- Extensive range of application at locations difficult to access
- Large memory, statistics and multiple data outputs
- Windows software for data transmission

TECHNICAL SPECIFICATIONS

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		
Indentor	Vickers diamond (angle 136°)		
Test load	10N, 20N, 30N, 49N, 98N (different probes)		
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^2	255 - 2180 (conversion)
Reproducibility	Vickers	HV	±1%
	Rockwell	HRC	±0.5
	Rockwell	HRB	±1.2
	Brinell	HB	±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" Color-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		
Batterie 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: ø19.5mm x 175mm length		
Weight	1400gr (including probe 190gr)		

ORDER DETAILS

HV400 Hardness tester HV400 for portable accurate testing on metals and ceramics

STANDARD DELIVERY

- Instrument
- Cable
- Power supply 100-240V / 50-60Hz
- Carrying case
- Manual
- INNOVATEST® 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