

Hardness Testing

UCI

(Ultrasonic Contact Impedance)

Hardness Tester




UCI
ULTRASONIC
CONTACT
IMPEDANCE



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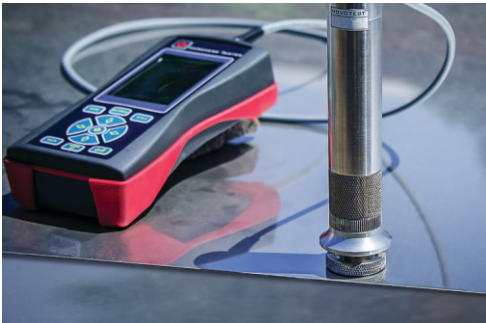
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UCI Hardness Tester

To solve the tasks of hardness testing of products that cannot be tested with Leeb (dynamic) hardness testers, our company offers hardness testers that implement the method of ultrasonic contact impedance (UCI) in accordance with ASTM A1038. A vibrating rod (mechanical resonator) with a diamond tip acts as an indenter in these devices, when it indent into the material, the base frequency of the resonator changes, on the basis of which the hardness is calculated. This method has proven itself around the world and has been used in industry for over 50 years.



MEASURING THE HARDNESS OF THIN-WALLED PRODUCTS



The UCI hardness tester allows user to measure products from 1 mm thick without any additional tools or operations, and even less with the use of special stand for thin sheets, which makes it unique among analogues.



MEASURING HARDNESS OF SMALL PRODUCTS



With UCI hardness tester the user can do hardness testing of products weighing just 100g or even less, without additional fixation and accessories.



MEASURING HARDNESS OF COMPLEX SHAPED PRODUCTS

The ultrasonic (UCI) hardness tester's probe needs an area of only a few square millimeters in order to measure hardness. This allows users to measure hardness in hard-to-reach places, products of complex shape, weld and heat affected zone (HAZ), gear teeth, etc.



COMBINED VERSION OF DEVICES

Any UCI CIMETRIX Ltd hardness tester can be equipped with any type Leeb probe, which makes it possible to solve almost any task of hardness testing with one device.



UCI and Leeb technology comparison table

	UCI	Leeb
Object min. weight	0.1 kg	5 kg
Object min. thickness	1 mm	10 mm
Imprint size (diameter)	~0.03 mm	~0.5 mm
Objects with limited access	+	-
Small round objects	+	-

CIMETRIX Ltd offers users two modifications of hardness testers TCM-U2 and TCM-U3 versions, there are comparison table:

Model	TCM-U2	TCM-U3
Display	Monochrome display (128x64)	Color LCD display (320x240)
Built-in camera	-	+
Wireless printer	-	+
Calibration cells	20	88
Memory	2000 cells	Up to 4 Gb
Modes	NORMAL STATISTICS SMART SIGNAL	GRAPH HISTOGRAM STATISTICS SMART SIGNAL
Precalibration for Leeb probe (materials)	Steel, alloy steel, stainless steel, aluminum or cast iron	Steel, alloy steel, stainless steel, brass, aluminum, cast iron, bronze, copper
Operation time	Up to 20 hours	Up to 10 hours



T-U2

STANDARD PACKAGE

Hardness tester
UCI probe (10N, 50N or 98N for choice)
AA batteries
Charger
USB cable
Operating manual
Software for PC
Case



T-U3

SPECIFICATIONS

UCI probe types	1kgf (10N) 2.2 lbf, 5kgf (50N) 11lbf, 10kgf (98N) 22lbf
Measuring range (with standard calibration)	HRC:20~70 Tensile strength, MPa: 370~1740 HB:90~650 User calibrations for any range (for example: HV100-1600) HV:230~940
Measuring accuracy	HRC: 2HRC, HB: 10HB, HV: 15HV
Standards	ASTM A1038 ASTM E140
Indenter	Diamond indenter (UCI)
Measuring direction	Any direction 360°
Data storage	Limited only by the memory card
Communication	Upload data to PC and export as a spreadsheet (USB cable and software included)
Hardness scale	HRC, HB, HV, Additional custom scales for calibration
Materials	Pre-calibrated for steel Additional custom materials for calibration
Operating environment	Temperature:-20°C~40°C; Humidity: 30%~80%R.H.

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