SonoDur 3

The **New** UCI Generation after SonoDur 2

Mobile Hardness testing on metals with UCI* in production and maintenance. Starting with goods income inspection until the final product is reached.

*Ultrasonic Contact Impedance

Norms: ASTM A 1038 and DIN 50159-1, 2
Conversions: ASTM E 140-13, EN ISO 18265

Multiple Solutions for the SonoDur Family and also for MIC10/MIC20 (by probe retrofit)

Motor probes (HV 0,1 – HV 0,8): 0.1 kgf, 0.3 kgf, 0.8 kgf
Handheld probes (HV 1 – HV 10): 1 kgf, 3kgf, 5 kgf, 10 kgf

SonoDur 3

The better Way to Hardness Testing

Rugged, easy to use, fast and precise. Made in Germany.

Instrument Features

- Carrying strap, edge protection, IP65, MIL-810G (vibration, shock, drop)
- Brilliant color display in 5", smooth glass shield for easy cleaning
- Direct function access just by touch, intuitive menu control, ideal for MIC10/MIC20 users and others
- No set-up needed at beginning of shift – ready for immediate use

Android Operating System and Data Transfer

- USB: transfer of measurement data in txt-format using the file explorer
- WLAN: automatic transfer of single values, completed data stets
- Bluetooth: manual transfer of a set of measurement data
- "Unlimited" storage capacity for measurement data and settings

Intelligent Management of Measurement Data and Settings

- Simple access to data and qualified back-traceable assessment of results
- File names can be predefined, automatic closing of data sets
- "AllMeas"- summarized list of results in stored data sets

Reliable Measurement Technique with long-Term Stability

Efficient working tool, optimized for the daily needs of the inspector

Unique

Can be calibrated in full according to DAKKS after DIN 50159-2 (calibration curve 150 – through 900 HV, diamond, nominal test force)

Handheld Probe
SONO-10HL "long nose" used on valve head

Measuring Specifications

Measuring principle	UCI Method, corresponds to DIN 50159, ASTM A1038		
Test indenter	Vickers diamond 136°		
Test loads Newton scale (1kgf = 9.81 N)	Motor probes: 1N (0.1 kgf), 3N (0.3kgf) and 8.6 N (0.9 kgf) Handheld Probes: 10N (1 kgf), 30N (3kgf), 49N (5kgf), 98N (10kgf), (Other test loads on request)		
Hardness scales and range (according to relevant standards), in this case table A1 respectively T1, T2 (low alloy steel). Different measuring ranges are valid for other materials. When exceeding the limits the conversion range will be extended. The calculated values are highlighted in red besides the original data in HV. **Note:** Conversions are acc. to latest ASTM E140-12bε1 (2013) und EN ISO 18265:2014. Conversions into tensile strength: 98N (10kgf) test load only.	Vickers Brinell Rockwell Rockwell Rockwell Rockwell Rockwell (EN ISO 18265 only) Rockwell Knoop (ASTM E140 only) Shore (ASTM E140 only) Tensile strength	HV HB HRB HRC HRE HRF HRA HRD HR45N HK HS MPa	10 – 1999 (9999) 76 – 618 41 – 105 20,3 – 68 70 – 108,5 82,6 – 115,1 60,7 – 85,6 40,3 – 76,9 19,9 – 75,4 87 – 920 34,2 – 97,3 255 – 2180
Measurement uncertainty*	< 4 % (HV5, HV 10). For other test loads and ranges see table below.		
Relative repeatability*	< 5 % (HV5, HV 10). For other test loads and ranges see table below.		

* exceeds DIN 50159, dependent on test load and range (see table below). Specifications are valid for 5 measurements using Vickers reference blocks and according to test conditions given in standard DIN 50159.

Hardness scale	Measurement uncertainty [%]				Relative repeatability [%]	
	< 250 HV	250 HV - 500 HV	500 HV - 800 HV	> 800 HV	< 250 HV	> 250 HV
HV 0,1	5	6	7	8	8	6
HV 0,3	5	6	7	8	8	6
HV 0,8	4	4	5	6	8	6
HV 1	4	4	5	6	8	6

Mechanical and Environmental (Instrument and probe)

Operating time	>10 hours in measurement operation (depending on system performance, temperature and instrument settings), up to 8 hours continuous operation, quick exchangeable battery pack (3.7V 3900mAh LiPolymer)
Operating Temperature	Probe: 0°C to ~ +45°C Instrument: -10° ~ +50°C // Charging +10°C ~ +40°C
Storage Temperature	-20°C ~ +70°C
Humidity	Max. 90%, non-condensing
Dimensions	Instrument ca. 164x86x23 mm, Motor probe Ø38mm, L=190 mm Handheld probe Ø25 mm, L=176 mm (free length of rod ca. 12,5 mm) Handheld probe Ø25 mm, L=207 mm (free length rod ca. 43 mm)
Weight	Instrument ca. 320 gr (incl. battery pack) Handheld probe ca. 280 gr, Motor probe ca. 370 gr

Instrument

Processor and Memory	ARM® Cortex™-A53 Octa Core 1.3 GHz / System 2GB RAM / storage me mory 16 GB eMMC / Micro SD card 4 GB (up to 32 GB)
Operating system	Android 5.1 (Android 7.0)
Keypad	4 function keys, system touch keyboard
Power	Main battery: 3,7V / 3900mAh, LiPo hard pack, quick exchange Charging time: <3h to 80% capacity (Instrument off) Shelf Hours: Up to 6 months AC Power supply/charger: 90V to 264VAC 50/60Hz to 5VDC
Display	5“ sunlight readable multi touch display (1280x720 pixel), LED-backlight (500 Cd/m2), adjustable
Interfaces	Jack for 5VDC operating/ charging |Docking connector (charging) USB 2.0 Micro USB (PC) / probe connector Lemo 4 pos. Micro SD-card 4 GB (up to 32 GB) | 2x SIM card WLAN 802.11 a/b/g/n | WCDMA/HSDAP/HSPUA, FDD-LTE / TDD-LTE) | GSM/GPRS/EDGE (b2/b3/b5/b8 | GPS / AGPS / GLONASS Bluetooth 4.0 (supports BLE mode) | NFC | Speaker, microphone
Sensors / Camera / LED	Light sensor, G-sensor, proximity sensor, rear camera 8 mega-pixel, multicolor status LED
IP-Proof	IP65 according IEC 60529 Edition 2.1:2001-02
Drop test	MIL-STD-810G Methode 516.6, 4 ft.
Shock Test	MIL-STD-810G Methode 516.6 Prozedur I
Vibration Test	MIL-STD-810G Methode 514.6 Prozedur I
Instrument Language	D, EN, IT, FR, SP, PL, CZ, CN - more on request

Scope of delivery

SonoDur3, Hardness Tester with Data Logger and Data Export, Data Transfer to PC (USB, WLAN or Bluetooth resp.), incl. SONO3-NG, Power Source, SONO2-NG/USB USB-Cable, SONO2-HM, ca. 1,5 m Probe Connection Cable, SONO3-TK-1, Transportation Case, SONO-CD, Product-USB-Stick, SONO3-Protect, Protection Foils

Mandatory accessory

Motor probe or handheld probe respectively

Other accessories

Reference blocks (MPA, company certificate), test stands, guiding harnesses, auxiliary SW.

Example for configurations