UT-1M

Ultrasonic Thickness gauge

Ultrasonic Thickness Gauge UT-1M is used for operational **non-destructive testing** of the thickness of products with one-way access, at the moment this method is the most common in the world for solving such tasks.

The method is **based on the property of materials to conduct ultrasound**, ultrasonic wawes are excited with the piezoceramic plate in the transducer and penetrates into the material through the couplant, then reflected from the bottom surface of the tested sample, and returns to the transducer. Based on the obtained sound transit time in the material, **the device calculates the thickness** in accordance with the velocity of propagation of ultrasonic waves in the test sample.
The thickness value is displayed on the device's display, **the measurement process takes about 1 second**.

NOVATEST Engineering Solutions

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New features:

The results of measurement, adjustment, calibration and testing reports of the ultrasonic thickness gauge in smartphone – the innovative NOVOTEST application for smartphones based on Android.

The functions of devices have no been so wide before! With the **Bluetooth connection**, your smartphone is able to c**ontrol all the functionality of the NOVOTEST ultrasonic thickness gauge without wires.** The intuitive interface of the application itself, access to the Internet, email and instant messengers, touch screen, camera, microphone and GPS receiver of the mobile device make the use of NOVOTEST devices much more convenient and versatile.

With NOVOTEST Lab App you are able:

- setting and calibration of the thickness gauge;
- display of measurement results in real time in numerical form with the construction of a graph, histogram or statistics;
- take a picture of the test object with the puting of thickness marks;
- creation of a video of the controlled product;
- recording audio notes for the tested object;
- automatic saving of measurement geolocation on Google Maps;
- displaying a Google map with markers of places of measurements made on it and the ability to view these measurements;
- displaying the calendar of measurements (presentation of the archive in the form of measurements grouped by date);
- formation of the final comprehensive report on the measurement;
- sending a finished report to e-mail, messenger (or in any convenient way) directly from the application;
- flexible structure of the archive of measurements – completely similar to the usual explorer, with the ability to create folders and files with any names;
- synchronization with PC and other smartphones;
- cloud service for storing the archive of measurements;
- automatic and manual synchronization of cloud measurement archives between devices;
- launching the Google navigation mode, building a route and accompanying to the point at which the measurements were made
- the ability to store archives of other devices with Bluetooth in one application.

The main advantages of the Ultrasonic Thickness Gauge UT-1M:

• Wide rage of measurements
To measure products in a wide range with one transducer, unlike most similar devices, the Ultrasonic Thickness Gauge UT-1M has a gain control function, which allows operator, for example, with a 5 MHz transducer, to measure steel products in the range from 0.5 to 500 mm and more. Using other probes the full measurement range is up to 1500 mm for steel.

• B-scan and automatic defect alarm function
To visualize the product profile, if necessary not only point measurement, but also scanning, a B-scan is implemented in the device, which allows the user to visually see thinning and thickening of the wall of the testing object.
Also, for ease of use, the device has an automatic defect alarm function, its meaning is that the operator can select boundary thickness values (minimum and maximum) when crossing the values of which the device will signal through the speaker, and also give a visual signal.

• Archive of probes and measurements
Ultrasonic Thickness Gauge UT-1M has the ability to save transducer's parameters (delay line, V-correction, etc.), and also has reference values for the wave velocities of many often measured materials stored in devices's memory, which allows the user to blindly (without reference data and a sample material for calculating speed) to measure various products with one-way access.

• Practical housing
Ultrasonic Thickness Gauge UT-1M is made in an ergonomic shockproof case, the silicone cover of which prevents the device from malfunctioning in case of a dropped down to floor or ground. Also, the device can be used in extreme climatic conditions, the temperature range of operating conditions is from -20 to +50 ° .

The device allows user to record the measurement results in the archive of the device, and subsequently transfer them to a PC using special software

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Technical features:

Measuring thicknesses range on steel, mm: 0.4 ... 1500 or more	• Probe 10MHz: 0.4-15 • Probe 10MHz: 0.45-300 • Probe 5MHz: 0.8-500 • Probe 2,5MHz: 2.5-1000 • Probe 2MHz: 3-1200 • Probe 1,25MHz: 4-1500
Probe dimensions, mm	• Probe 10MHz: 4×9×60 mm • Probe 10MHz: D12×15 mm • Probe 5MHz: D17×20 mm • Probe 2,5MHz: D20×21 mm • Probe 2MHz: D30×28 mm • Probe 1,25MHz: D30×35 mm
Dimensions of probe contact area/crystal, mm	• Probe 10MHz: 2×7/2×3 mm • Probe 10MHz: D9/D6 mm • Probe 5MHz: D14/D10 mm • Probe 2,5MHz: D16/D12 mm • Probe 2MHz: D24/D20 mm • Probe 1,25MHz: D24/D20 mm
Optional probes	• 5MHz high-temperature probe (echo) 10/2: range 0,8 – 300 mm, surface temperature up to 250 °□/482 °F • 2,5MHz probe (echo-echo) 12/2 for through coating: range 6 – 30 mm, coating thickness range – up to 1 mm • 5MHz probe (echo-echo) 10/2 for through coating: range 3,5 – 26 mm, coating thickness range – up to 1 mm • 10MHz probe (echo-echo) 6/2 for through coating: range 2 – 12 mm, coating thickness range – up to 0,6 mm • 5MHz probe (echo-echo) 10/2 for through coating, underwater, 10 m cable: range 3,5 – 26 mm, coating thickness range – up to 1 mm • 5MHz probe (echo-echo) 10/2 for through coating, underwater, 20 m cable: range 3,5 – 26 mm, coating thickness range – up to 1 mm • 5MHz probe (echo-echo) 10/2 for through coating, underwater, 30 m cable: range 3,5 – 26 mm, coating thickness range – up to 1 mm
Compatible probe types	Ultrasonic, dual-element, longitudinal waves (including probes of other manufacturers)
Compatibility with Active EMAT Transducer EMAT-A1	No
Probe cable connector type	2 Lemo 00
Probe cable length	1,2 m
Measurement scales	• mm (m/s) – inch (inch/μs)

Measurement resolution, mm/inch	• 0.01/0.001 • (0.01/0.0001 by request)
Basic measurement accuracy	± (0,01 T+0,05) mm
Gain range	±20 dB
Response time, with no more than	1 s
Setting range of the ultrasonic velocity	1000-17000 m/s
Preset velocities for materials	Steel (8 different grades), Aluminum, Iron, Cast Iron, Zinc, Chromium, Copper, Brass, Bronze, Silver, Gold, Nickel, Tungsten, Tin, Lead, Molybdenum, Manganese, Magnesium, Rubber, Polystyrene, Plexiglas, Capron, Caprolon, ED-5, Ebonite, Porcelain, Teflon, Textolite, Silicate Glass, Acrylic glass, User
Operating modes	• Normal • B-Scan • Control mode
Standard	• ASTM E797 • EN 14127 • EN15317
Body type/Dust and moisture protection level	• Plastic, with shockproof silicone case • Standard for shop and field operation • IP54
Calibration thickness block on the body	6 mm (Steel/6080 m/s)
Storage capacity of measurement results	UT-1M (Lab) – 128 in the device + in NOVOTEST Lab App limited only by the memory of the Android gadgets
Measurement archives	• Device menu • Android smartphone/tablet • Cloud storage/PC • PDF • Excel (CSV)
Menu lenguages	English, Spanish, Ukrainian, Russian (other languages optional)
Operating environment	• Temperature:-20°C~40°C • Humidity: 30%~80%R.H..
Power supply	DC 3V (2 pcs standard batteries AA)
Time of continuous work hours	25 h
Charging	External charger for 2pcs AA batteries
Weight of electronic unit with batteries, no more	0,25 Kg
Overall dimensions	120x60x25mm
Package weight	1,5 Kg
Package dimensions	33x27x10cm
Warranty	• Basic: 12 months for electronic unit; 6 months for probes • Extended (optional): up to 3 years

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Accessories:

Basic" kit:

- Electronic unit Ultrasonic Thickness Gauge UT-1M (Lab)
- Probe/transducer (echo) – 1 pc for choice: (2.5MHz, 5MHz or 10MHz)

Accessory package:

- AA batteries – 2 pcs
- Charger
- USB cable for PC
- PC software:
- NOVOTEST LAB App for Android gadgets
- Operating manual/Quick guide
- Transportation plastic case

"Advanced" kit:

- Electronic unit Ultrasonic Thickness Gauge UT-1M/UT-1M (Lab)
- 5MHz (echo) probe 10/2
- 5MHz (echo-echo) probe 10/2 or 5MHz high-temperature (echo) probe 10/2
- Step Wedge Thickness Calibration Block 10-20-30-40-50 mm (or another)
- Accessory package

"Expert" kit:

- Electronic unit Ultrasonic Thickness Gauge UT-1M/UT-1M (Lab)
- 1.25MHz (echo) probe 20/2 or 2MHz (echo) probe 20/2
- 5MHz (echo) probe 10/2 or 10MHz (echo) probe 6/2
- 5MHz (echo-echo) probe 10/2
- 5MHz high-temperature probe 10/2
- Step Wedge Thickness Calibration Block 10-20-30-40-50 mm (or another)
- Ultrasonic couplant gel (optionally)
- Accessory package