

Ultrasonic Thickness Gauge NOVOTEST UT-1M



Ultrasonic Thickness Gauge NOVOTEST UT-1M is used for operational non-destructive testing of the thickness of products with one-way access, now 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 waves are excited with the piezoceramic plate in the transducer and penetrates 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.

NOVOTEST Lab is your real laboratory in your pocket! Optionally with UT-1M (Lab) model only!

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 not been so wide before! With the Bluetooth connection, your smartphone can control 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 putting 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 like 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 NOVOTEST UT-1M:

WIDE RANGE OF MEASUREMENTS

To measure products in a wide range with one transducer, unlike most similar devices, the Ultrasonic Thickness Gauge NOVOTEST UT-1M has a gain control function, which allows operator, for example, with a 5 MHz transducer, to measure steel products in the range even from 0.5 and up 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 give a visual signal.

ARCHIVE OF PROBES AND MEASUREMENTS

Ultrasonic Thickness Gauge NOVOTEST UT-1M can 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' 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 NOVOTEST 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 ° C.

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.

Advantages	Specifications	Available options	Standard package	Media
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- Wireless connection with Android gadgets via [NOVOTEST Lab App](#) (optionally with UT-1M ([Lab](#)) model only)
- Wide measurement range (0.4 to 1500 mm and more, depending on material and surfaces)
- Available probes 1.25-10 MHz:
 - 1.25MHz probe (echo) 20/2 for substantial thicknesses or materials with exceptionally high signal attenuation
 - 2.0MHz probe (echo) 20/2 for large thicknesses or materials with high signal attenuation
 - 2.5MHz probe (echo) 12/2 for thick samples
 - 5MHz probe (echo) 10/2 for a wide range of basic samples
 - 10MHz probe (echo) 6/2 for thin samples
 - 10MHz probe (echo) 2x3 for products of complex shapes, usually turbine blades
 - 5MHz high-temperature probe (echo) 10/2 for heated samples up to 250 °C/482 °F
 - 2.5MHz probe (echo-echo) 12/2 for through coating
 - 5MHz probe (echo-echo) 10/2 for through coating
 - 10MHz probe (echo-echo) 6/2 for through coating
 - 5MHz probe (echo-echo) 10/2 for through coating, underwater, 10 m cable
 - 5MHz probe (echo-echo) 10/2 for through coating, underwater, 20 m cable
 - 5MHz probe (echo-echo) 10/2 for through coating, underwater, 30 m cable
- Gain adjustment (±20 Db)
- Preset velocities for many materials
- B-scan and control modes
- Through-coating (echo-echo) mode
- Threshold setting with automatic alarm
- Saving the settings for different probes
- Compatibility with probes of other manufacturers
- V-path correction and TVG adjusting for the user's probes
- Measurement storage and PC software
- PC cable connection:
 - Online – [NOVOTEST.INFO/USB-connect](#)
 - Offline – [NOVOTEST USB-Connect](#)
- Wireless connection with Android gadgets via [NOVOTEST LAB App](#) (only for UT-1M ([Lab](#)))
- Shockproof, ergonomic housing
- Multi-language menu
- Convenience and ease of operation
- Minimum number of controls
- Select the type of probe through single button
- Graphical display with backlight
- Compensation of probe delay
- Control of the batteries
- Mapping the presence of acoustic coupling on the graphic display
- Fixation of the last measurement results in the removal of the transducer surface
- Availability of a wide range of accessories

Advantages	Specifications	Available options	Standard package	Media
Measuring thicknesses range on steel, mm:	- Probe 10MHz – P112-10-2x3 - Probe 10MHz – P112-10-6 / 2 - Probe 5MHz – P112-5-10 / 2 - Probe 2,5MHz – P112-2,5-12 / 2 - Probe 2MHz – P112-2-20 / 2 - Probe 1,25MHz – P112-1.25-20 / 2	0.4 to 1500 mm and more (depending on material and surfaces)	4-15 0.45-300 0.6-500 2.5-1000 3-1200 4-1500	
Probe dimensions, mm:	- Probe 10MHz – P112-10-2x3 - Probe 10MHz – P112-10-6 / 2 - Probe 5MHz – P112-5-10 / 2 - Probe 2,5MHz – P112-2,5-12 / 2 - Probe 2MHz – P112-2-20 / 2 - Probe 1,25MHz – P112-1.25-20 / 2	4x9x60 - D12x15 - D17x20 - D20x28 - D30x28 - D30x35		
Dimensions of probe contact area/crystal, mm:	- Probe 10MHz – P112-10-2x3 - Probe 10MHz – P112-10-6 / 2 - Probe 5MHz – P112-5-10 / 2 - Probe 2,5MHz – P112-2,5-12 / 2 - Probe 2MHz – P112-2-20 / 2 - Probe 1,25MHz – P112-1.25-20 / 2	2x7/2x3 - D9/D6 - D14/D10 - D16/D12 - D24/D20 - D24/D30		
Optional probes:	5MHz high-temperature probe (echo) 10/2 2,5MHz probe (echo-echo) 12/2 for through coating 5MHz probe (echo-echo) 10/2 for through coating 10MHz probe (echo-echo) 6/2 for through coating 5MHz probe (echo-echo) 10/2 for through coating, underwater, 10 m cable 5MHz probe (echo-echo) 10/2 for through coating, underwater, 20 m cable 5MHz probe (echo-echo) 10/2 for through coating, underwater, 30 m cable	- range 0.6 – 300 mm, surface temperature up to 250 °C/482 °F - range 0.5 – 30 mm, coating thickness range – up to 1 mm - range 3.5 – 26 mm, coating thickness range – up to 1 mm - range 2 – 12 mm, coating thickness range – up to 0.6 mm - range 3.5 – 26 mm, coating thickness range – up to 1 mm - range 3.5 – 26 mm, coating thickness range – up to 1 mm - 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 calibrations (V-path, TVG, etc.)		- factory for NOVOTEST probes - users for probes of other manufacturers		
Probe cable connector type		2 Lemo 00		
Probe cable length, m		1,2		
Measurement scales		- mm (m/s) - inch (inches/s)		
Measurement resolution, mm/inch		0.01/0.001 (0.01/0.0001 by request)		
Basic measurement accuracy, mm		± (0.01 T+0.05) (T for range 0.6 – 300 mm)		
Gain range, dB		± 20		
Response time, with no more than, s		1		
Setting range of the ultrasonic velocity, m / s		1000-17000		
Preset velocities for materials		Steel (8 different grades), Aluminum, Iron, Cast Iron, Zinc, Chromium, Copper, Bronze, Silver, Gold, Nickel, Titanium, Tin, Lead, Molybdenum, Mandanese, Magnesium, Rubber, Capron, Caprolon, ED-5, Ebonite, Porcelain, Teflon, Textolite, Silicate Glass, Acrylic glass, User		
Device menu modes		- Measurement - Calibration - Archive - Memory card - Information		
Operating modes		- Normal - B-scan - Control mode		
Standards		- 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)		
PC cable connection		- Online – NOVOTEST LINEO/USB-connect - Offline NOVOTEST USB-Connect		
Wireless connection with Android gadgets via NOVOTEST Lab App		- UT-1M – No - UT-1M (Lab) – Yes		
Storage capacity of measurement results		- UT-1M – 128 - 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 languages		English, Spanish, Ukrainian, Russian (other languages optional)		
Operating environment		- Temperature: -20°C – +40°C - Humidity: 30% – 80% RH		
Power supply		DC 3V (2 pcs standard batteries AA)		
Time of continuous work hours, not less, h		25		
Charging		External charger for 2pcs AA batteries		
Weight of electronic unit with batteries, no more, kg		0.25		
Overall dimensions, mm		120x60x25		
Package weight, kg		1.5		
Package dimensions, cm		33x27x10		
Documents		- Operation manual UT-1M - Quick guide UT-1M - Brochure UT-1M/2A		
Country of origin		Made in Ukraine (Europe)		
Warranty		- Basic – 12 months for electronic unit 6 months for probes - Extended (optional) – up to 3 years		
General comparative chart of all models NOVOTEST ultrasonic thickness gauges (without UT-3M-EMAT)				
Model name	UT-2A	UT-1M	UT-1M-IP	UT-1M-SI
Measuring thicknesses range for steel, mm	0.4 – 1500 and more, depending on material and surfaces	0.45 – 1500 and more, depending on material and surfaces		
Resolution, mm		0.01		
Basic measurement accuracy, mm		± (0.01 T+0.05) (T for range 0.6 – 300 mm)		
Basic probes / range for steel		2,5 MHz / 2,5 – 1000 mm 5 MHz / 0,6 – 500 mm 10 MHz / 0,45 – 300 mm 1,25 MHz / 4 – 1500 mm 2 MHz / 3 – 1200 mm		
Optional probes / range for steel		High-temperature 5MHz (up to 250 °C) / 0,6 – 300 mm Echo-Echo 5MHz for through-coating measurements / 3,5 – 26 mm		
Compatibility with Active EMAT Transducer EMAT-A1	Yes	No		
Compatible probe types	Dual-element Single-element	Dual-element		
Operating modes	Normal A-scan B-scan Manual mode Control mode	Normal B-scan Control mode		
Measurement methods	Echo Echo-Echo Peak-Peak Zero-crossing	Echo Echo-Echo		
Measurement units		mm inch		
Display	Color, 3,5 inch, 480*320	Monochrome, 2,5 inch, 128*64		
Menu languages	English Ukrainian Russian (other languages optional)	English Spanish Ukrainian Russian (other languages optional)		
Body type/ Dust and moisture protection level	Metal, durable /Standard for shop and field operation	Plastic, with shockproof silicone case / Standard for shop and field operation	Plastic, sealed /High – optionally water immersion up to 1m deep for 30 min	Metal, durable /Standard for shop and field operation
Saving of the settings for different probes		Yes		
Compatibility with probes of other manufacturers		Yes		
V-path correction and TVG adjusting for the user's probes		Yes		
Storage of measurement results	7000 and more (Limited only by the memory card)	128	128	128
PC cable connection (via www.novotest.info)		Yes		
Smartphone Wireless connection (via NOVOTEST Lab)	No	Optional	Optional	No
Charger type	Any USB socket (charger adapter, PC, power bank, etc.)	External charger for batteries	Any USB socket (charger adapter, PC, power bank, etc.)	External charger for batteries
Battery	Built-in Li-Ion	2pcs standard AA batteries	3pcs standard AA batteries	2pcs standard AA batteries
Electronic unit weight, no more, kg	0,5	0,25	0,35	0,35
Dimensions (L x W x H), mm	165x90x50	122x76x37	160x90x26	130x90x40
Minimum time of continuous work, h	10	25	25	25
Operating temperature range, ° C		-20 to +40		

Advantages	Specifications	Available options	Standard package	Media
◦ – UT-1M (Lab) – with Wireless connection to Android gadgets via NOVOTEST Lab App – UT-1M – basic model ◦ Android smartphone or tablet (optionally with IP65) for NOVOTEST Lab App ◦ Ultrasonic couplant gel ◦ Spare silicon cover for electronic unit ◦ Calibration certificate issued by the third-party metrology laboratory (ILAC) ◦ Certificate of origin issued by the Chamber of Commerce and Industry ◦ Certificate of Origin and Quality from NOVOTEST ◦ CE certificate ◦ Extended warranty period up to 3 years ◦ Individual modification to customer requirements – UTG model with IP65 – UT-1M-IP – UTG model with A-scan – UT-2A (A-scan) – EMAT TG model – UT-3M-EMA ◦ UT-probes – 1.25MHz probe (echo) 20/2 for substantial thicknesses or materials with exceptionally high signal attenuation – 2.0MHz probe (echo) 20/2 for large thicknesses or materials with high signal attenuation – 2.5MHz probe (echo) 12/2 for thick samples – 5MHz probe (echo) 10/2 for a wide range of basic samples – 10MHz probe (echo) 6/2 for thin samples – 10MHz probe (echo) 3x2 for products of complex shapes, usually turbine blades – 5MHz high-temperature probe (echo) 10/2 for heated samples up to 250 °C/482 °F – 2.5MHz probe (echo-echo) 12/2 for through coating – 5MHz probe (echo-echo) 10/2 for through coating – 10MHz probe (echo-echo) 6/2 for through coating – 5MHz probe (echo-echo) 10/2 for through coating, underwater, 10 m cable – 5MHz probe (echo-echo) 10/2 for through coating, underwater, 20 m cable – 5MHz probe (echo-echo) 10/2 for through coating, underwater, 30 m cable ◦ Step wedge Calibration Blocks				
Thickness nominals			Material	
1-3-5-7-10-15 mm			Steel, SS, Aluminum	
1-2-3-4-5-6-7-8-9-10-11-12-13-14-15 mm			Steel, SS, Aluminum	
2,5-5-7,5-10-12,5 mm			Steel, SS, Aluminum	
2,5-5-7,5-10-12,5-15-17,5-20 mm			Steel, SS, Aluminum	
2,5-5-7,5-10-12,5-15-20 mm			Steel, SS, Aluminum	
2.5-5-10-20 mm			Steel, SS, Aluminum	
2-3-4-5-6-7-8-9-10 mm			Steel, SS, Aluminum	
2-3-4-5-6-7-8-9-10-11 mm			Steel, SS, Aluminum	
2-4-6-8-10 mm			Steel, SS, Aluminum	
2-4-6-8-10-12 mm			Steel, SS, Aluminum	
2-5-10-15-20-25 mm			Steel, SS, Aluminum	
2-5-10-20-30-40 mm			Steel, SS, Aluminum	
3-4-5-6-7-8-9 mm			Steel, SS, Aluminum	
4-6-8-10-12-15 mm			Steel, SS, Aluminum	
5-10-15-20-25-30 mm			Steel, SS, Aluminum	
5-10-15-20-25 mm			Steel, SS, Aluminum	
5-10-15-20-30-40 mm			Steel, SS, Aluminum	
5-10-15 mm			Steel, SS, Aluminum	
5-10-20 mm, step 0.1			Steel, SS, Aluminum	
5-10-20-30-40-50 mm			Steel, SS, Aluminum	
10-11-12-13-14-15 mm			Steel, SS, Aluminum	
10-20-30-40-50 mm			Steel, SS, Aluminum	
10-20-40-60-80-100 mm			Steel, SS, Aluminum	
*Other step wedge blocks can be produced by request.				
◦ Reference Thickness Blocks				
Thickness nominals			Material	
0,2 mm			Steel, SS, Aluminum	
0,3 mm			Steel, SS, Aluminum	
0,4 mm			Steel, SS, Aluminum	
0,5 mm			Steel, SS, Aluminum	
0,8 mm			Steel, SS, Aluminum	
1 mm			Steel, SS, Aluminum	
1,5 mm			Steel, SS, Aluminum	
2 mm			Steel, SS, Aluminum	
3 mm			Steel, SS, Aluminum	
4 mm			Steel, SS, Aluminum	
6 mm			Steel, SS, Aluminum	
10 mm			Steel, SS, Aluminum	
15 mm			Steel, SS, Aluminum	
20 mm			Steel, SS, Aluminum	
25 mm			Steel, SS, Aluminum	
30 mm			Steel, SS, Aluminum	
40 mm			Steel, SS, Aluminum	
50 mm			Steel, SS, Aluminum	
75 mm			Steel, SS, Aluminum	
90 mm			Steel, SS, Aluminum	
100 mm			Steel, SS, Aluminum	
125 mm			Steel, SS, Aluminum	
150 mm			Steel, SS, Aluminum	
175 mm			Steel, SS, Aluminum	
200 mm			Steel, SS, Aluminum	
300 mm			Steel, SS, Aluminum	
*Other reference thickness blocks can be produced by request.				

Advantages	Specifications	Available options	Standard package	Media
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"Basic" kit:

- Electronic unit Ultrasonic Thickness Gauge UT-1M/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:
 - Online – NOVOTEST.INFO/USB-connect
 - Offline – NOVOTEST USB-Connect
 - [NOVOTEST LAB App](#) for Android gadgets (for UT-1M (Lab) only)
 - 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

Other configurations of the packages are available as well.