



<b>Product Name</b>	<b>GAOTek E1 Ultrasonic Tester</b>
<b>Product SKU</b>	<b>GAOTek-EIT-163</b>
<b>Product URL</b>	<a href="https://gaotek.com/product/gaotek-e1-ultrasonic-tester/">https://gaotek.com/product/gaotek-e1-ultrasonic-tester/</a>

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## GAOTek E1 Ultrasonic Tester



Digital ultrasonic flaw detector

### I. Overview

This digital ultrasonic flaw detector can quickly and easily, without damage, and accurately carry out a variety of defects in the workpiece, such as cracks, welds, pores, and pores.

Detection, positioning, evaluation, and diagnosis of sand holes, inclusion, folding, etc., widely used in electric power, petrochemical, boiler pressure vessels, steel structure, military,

Aerospace, railway transportation, automobile, machinery, and other fields. It is an essential instrument in the non-destructive testing industry.

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## II The Main Function

- TFT industrial LCD (320x240, 5.7 inches), LED backlight, power saving, long life, reliable;
- Real-time sampling frequency 50MHz, equivalent sampling frequency 200MHz, which not only reduces cost, reduces power consumption, but also perfectly displays waveform details;
- The power consumption of this machine is only about 2W. The use of 4 No.5 2500mAh Ni-MH rechargeable batteries can work continuously for about 5 ~ 6.5 hours, emergency

Ordinary No. 5 alkaline batteries can also be used. Compared with the use of custom lithium panels, the battery renewal cost is quite low, and the trouble of purchasing original batteries is also saved.

- The transmitting pulse is a negative square wave, and the width is adjustable so that the probe transmission efficiency is improved, the echo is increased, and the ability to find small defects is improved;
- Echo display area left and right split screen display mode, the left screen shows the defect wave of a bottom wavefront, the right screen shows high bottom waves such as 10 bottom wave height,

When the flat plate flaw is detected, it can be seen clearly near and far away;

- It has a distinctive waveform expansion function, and the expansion degree is independent of the width of the gate (the vast majority of products on the market are related to the width of the gate, for Changing the degree of width, to repeated operation), you can continuously change the degree of expansion, after the expansion of the waveform, the delay can still be adjusted, so that you can see

At any part, return to the original sound path and delay when exiting the extension;

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- With extension point indication function. When the extension is opened, a small triangle appears below the horizontal axis, indicating that the point is the extension. When the sound path changes, the echo position on the point will not change;
- The Dynamic waveform description function, can draw the dynamic waveform curve (moving probe and echo height relationship), easy to analyse the nature of defects;
- With interface wave locking function, can use liquid immersion method flaw detection or thickness measurement. The interface wave is locked at the beginning of the acoustic path (the zero of the acoustic path) so that the interface wave

jitter is eliminated, and the defect echo or the workpiece bottom wave will not jitter. The entire display area can be used to display the echo and can be changed arbitrarily

Change the sound path without affecting the locking of the interface wave. In the upper right corner of the display set up a 64x40 point small window, similar to the painting of a TV

Drawing function, with a real-time display of interface wave lock in a small window;

- Preset 30 flaw detection configuration channels, no need to bring the test block to the site calibration;
- Can store 127 reverberation parameters, and 4000 thickness measurement data;
- There is a measuring gate (also called incoming wave gate), shown by a solid line, and a wave loss alarm gate (also called B gate), shown by a dashed line, the wave loss gate is not It can be turned off when used;
- Real-time display of the highest echo sound path, height, defect equivalent aperture, and other parameters, various parameters refresh about 4 times per second (refresh too

Fast but can not see clearly);

- Can measure material sound speed, probe delay and K value;

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- DAC, AVG curve automatically generated, can float with gain, acoustic path, delay (translation) change. When making DAC curve multisampling,

The sampling order is arbitrary (does not require sampling points from near to far, you can jump sampling, to reduce the number of test block turnover), multi-point sampling, halfway

Also adjustable gain, sound path, and delay. When making an AVG curve, the bottom wave can also be sampled;

- Peak memory, echo envelope function. The peak echo or envelope line is displayed as a dashed line, while the real-time echo is still displayed as a solid line

The color can be different so that the operator can observe the relationship between the two in real time;

- B scanning function, which can display the workpiece cross-section;

- High-speed automatic height function. Press the automatic height key once, and the echo inside the wave gate can be adjusted to about 80% height within 1 ~ 2S, press the key once

Adjust, this can quickly change the gain so that the echo is adjusted to a reasonable height;

- The calendar clock displays and automatically records the storage time when the echo chart is stored;

- Distance (time) - gain enhancement function, improve the distance echo amplitude;

- With search sensitivity increase ON/OFF switch, can be quickly switched between search/quantification. The search sensitivity increase setting range is 0 ~

20dB;

- Inhibition does not affect linearity;

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- RS-232 communication port, after sending the recorded data to the PC, outputs the report on the PC (free editing software is provided), and print;
- Relative gain zero key, can directly read the gain change. If it is customary to express the attenuation amount, you can first adjust the gain to the maximum, and then press this key,

Look at the value of the relative gain is the attenuation;

- When using the inclined probe, the sound path scale can also display two rows of scale values at the same time, respectively representing the horizontal component and the vertical component, no need to switch back and forth.

The location of the defect can be determined by knowing the component values of the two directions.

- Rapid return to zero function of sound path delay. Press the delay coding knob 0.6S, and the delay will quickly return to zero;
- Curve position prompt function, such as the produced DAC or AVG curve is not in the display area, changing the gain, sound path, delay

After that, it will indicate whether the curve position is too high or too left or too right to help judge the correct direction of operation (this function is only set in menu 7);

- The machine adopts large signal detection to improve linearity and expand dynamic range;
- Two thickness measurement modes (first wave to bottom wave mode or bottom wave to bottom wave mode) to meet different thickness measurement requirements;
- Fast start, press the power switch for 3S to detect the flaw. After shutting down for 1S, you can turn it on again to return to the original state, so that you can be in the flaw detection room  
Downtime Extends battery life by shutting down.

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### III. Technical Specification

Material sound velocity	1000 ~5999M/S
Loudest range	6000mm, full scale range minimum 4mm (steel, longitudinal wave, reflection type)
frequency range	0.4~10MHz (broadband) / 1 ~ 3/3 ~10MHz (Bandpass)
gain margin	0~110dB (step size 0.1dB, 1dB,10dB)
Delay range	0~6000mm
K value range	0.20 ~ 5.00
shim range	0~50%
increment	0~20dB
compensate	-20 ~ 20dB
Length line	-20 ~ 20dB
Quantitative line	-20 ~ 20dB
Abandoned line	-20 ~ 20dB
vertical linearity	<3% Technology inspection bureau measured 1.7%

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horizontal linearity	<0.3% Technology inspection Bureau measured 0%			
Transmitting supply voltage	DC 200V			
Transmitting pulse width	Negative pulse square wave 0.05 ~ 0.6μS adjustable (step size 0.01μS)			
Internal resistance of transmitting pulse	≤10Ω			
Transmitting repetition rate	25 ~ 400Hz acoustic		400/200Hz z	FAST/SLOW

	range < 150μ S				
		acoustic range >	μS time	200/100Hz	FAST/SLOW

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		150 $\mu$ S			
		acous tic range > 300 $\mu$ S	$\mu$ S time	100/50Hz	FAST/SLO W
		acous tic range > 600 $\mu$ S		50/25Hz	FAST/SLO W
Probe damping resistance	About 120 $\Omega$ fixed				
amplifier input	Gain 0dB, about 50V peak at 100% screen height				

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	Input noise about 50 $\mu$ V peak (broadband) Bandwidth  noise about 16nV $\sqrt$ Hz peak
digital sample	8bit real-time 50MHz, equivalent 200MHz (hardware  implementation)
display usage	Detection +, detection -, full wave
display device	TFT Industrial LCD display (320x240, 5.7 inches), LED  backlight
LCD refresh frequency	50Hz
strobe	Wave gate, wave gate, adjustable
dynamic range	>32dB Technology Inspection Bureau measured 38dB
surplus sensitivity	>58dB (related to the probe) 66dB measured by the  Technology Inspection Bureau

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resolution	>26dB (probe related)
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Thickness resolution	0.02mm (thickness less than 650mm)
power supply	4 section 5 Ni-MH rechargeable 2500mAh External power supply DC9 ~ 15V 0.5 ~
Battery power consumption	Approx. 2W (350mm sound path, backlight intensity, transmission repetition rate FAST)
	Approx. 1.5W (350mm sound path, low backlight, SLOW emission repetition rate)
Battery continuous working time	Approx. 5 hours (350mm sound path, backlight intensity, transmission repetition rate FAST)

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	Approx. 6.5 hours (350mm sound path, low backlight, SLOW transmission repetition rate)
Storage ambient temperature	- 20°C ~ + 70°C
operating ambient temperature	- 10°C ~ + 50°C
boundary dimension	245 x 152 x 41 mm (excluding knob protrusion)
weight	Approx. 950 g (including battery) (including 4 AA nickel-metal hydride batteries)

#### IV Maintenance and Maintenance

- After the inspection is completed, the surface of the instrument should be cleaned and then placed in a dry and ventilated place indoors;
- The probe connection should not be twisted under heavy pressure, and the bottom of the plug should be grasped when pulling and inserting the connection;

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- To protect the flaw detector and battery, power on at least 1 to 2 hours every month, and charge the battery to avoid moisture or over-discharge of the components

And affect the service life;

- The flaw detector in the process of moving, should avoid falling or strong vibration, impact and rain, snow and other splash;

It is strictly prohibited to wipe the shell with dissolved substances.

**Contact us: [sales@gaotek.com](mailto:sales@gaotek.com)**

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