METROLOGY®

Non-destruction Testing Equipment

ECONOMIC QUICK

EASY ACCURATE

NTE

Perfect for Non-destruction Testing

SAVE

Time & Cost

Improved efficiency & accuracy

METROLOGY®

Coating Thickness Gauge

American Society of Testing and Materials

Innovation Design R&D Patented Technology Award

CTG-9000 series is a portable Non-destructive testing instrument. It can quickly, accurately measure the thickness of the coating with no damage. By using different measuring probes, it can meet the needs of a variety of measurement. The instrument is widely used in manufacturing, metal processing industry, chemical industry, commodities inspection, and other areas.

CTG-9000 series of coating thickness gauges comply with ISO-2178、2360、ASTM-B499、B244 Standard Test Method for Measurement of Coating Thicknesses test standards, can be widely used in aerospace, automobile and motorcycle, machinery manufacturing, metal processing industry, electronics, petroleum, chemical industry and commodity inspection. It is an indispensable instrument for the professional requirements of materials and product external protective layer.

Coating Thickness Gauge

Taiwan Excellent products
Diamond Gold Award

CTG-9000 series products can provide three types of film thickness measurement,

1. Electromagnetic type Coating thickness gauge
2. Eddy current type Coating thickness gauge
3. Electromagnetic and eddy current dual-purpose Coating thickness gauge

Electromagnetic type Coating thickness gauge CTG-9000F

Principle: When an AC electromagnet approaches a magnetic metal, the number of magnetic fluxes of the coil will change depending on the proximity distance, so the voltage at both ends of the coil will also change. This voltage change is read from the current value and then converted into film thickness

Measurement object: non-magnetic coating on magnetic metal

Substrate: steel, iron, #4 stainless steel, etc.

Coating: paint, baking varnish, black dyeing, Enamel, Teflon, aluminum, copper, chromium, tin, hot-dip galvanizing, electroless nickel, non-metallic coating, thin film, chromic acid film, phosphoric acid film, rubber

Eddy current type Coating thickness gauge CTG-9000N

Principle: The eddy current flows in the induction coil above. When it is close to the metal surface, eddy current is also generated on the metal surface. This eddy current varies with the distance between the induction coil and the metal, so the voltage at both ends of the induction coil is also generated Change, this voltage change is read from the current value and then converted into film thickness

Measurement object: non-conductive insulating coating on non-magnetic metal

Substrate: aluminum alloy, magnesium alloy, zinc alloy, stainless steel, copper, tin, etc.

Coating: paint, baking varnish, black dyeing, Enamel, Teflon, chrome, hard anodizing, anodizing, non-metal coating, film, chromic acid film, phosphoric acid film, rubber, plastic

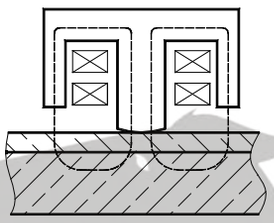
Dual-purpose Coating thickness gauge CTG-9000FN

The use of electromagnetic and eddy current thickness measurement methods and the configuration of these two interchangeable probes can measure the thickness of non-magnetic plating and coating on magnetic metal substrates and measure non-conductive plating and coating on non-magnetic metal substrates. Layer thickness

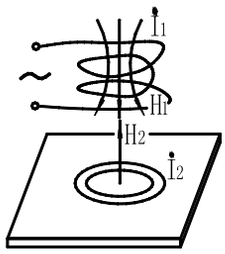
Features

1. With seven kinds of inductive probes: four electromagnetic and three eddy current inductive probes, which can be applied to the needs of various measurement conditions
2. With two measurement methods: single measurement can display measurement results one by one and continuous measurement can display measurement results one after another
3. With two working modes: direct mode of random measurement value temporary storage and group mode of recording test data in batches
4. With five statistics: test times, maximum value, minimum value, average value, standard deviation measurement value automatic statistics function
5. With calibration function: single-point and two-point calibration methods can be used, and basic calibration methods can also be used to correct probe system errors
6. It has functions such as automatic warning of out-of-tolerance measurement values, low power and buzzer indication, manual or automatic shutdown, etc.
7. With data storage, deletion, update, upper and lower limit settings, LCD backlight brightness adjustment functions

Coating Thickness Gauge



Electromagnetic principle



Eddy current principle

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Technical specifications

ISO、ASTM Standard Test Method for Measurement of Coating Thicknesses measurement

Model No.	CTG-9000F	CTG-9000N	CTG-9000FN
Measuring principle	Electromagnetic Fe	Eddy current NFe	Dual purpose Fe & NFe
Probe form	F1	N1	F1 & N1
Measuring range	0-1250 μ m		
Minimum resolution	0.1 μ m		
Accuracy	±[(1-3%) T+1] μ m T: refers to the thickness of testing piece		
Min curvature of the min area	1.5 mm	3.0 mm	1.5 & 3.0 mm
Diameter of the min area	Ø 7 mm	Ø 5 mm	Ø 7 & Ø 5 mm
Critical thickness of substrate	0.5 mm	0.3 mm	0.5 & 0.3 mm
Memory	200 groups measured data		
Dimensions / weight	Dimensions：130*70*29mm weight：400G		
Power supply	AAA 1.5V*2 Alkaline battery		
Environment	temperature 0-40° C humidity 20-90 % RH Environment without strong magnetic field		
Standard configuration	Main Machine、F1 magnetic or N1 non-magnetic probe, substrate test piece, 1.5V AAA battery, Packing box 5 calibration specimens (48.5、99.8、249、513、1024 μ m)		

Coating Thickness Gauge

Dual purpose Coating Thickness Gauge CTG-9000P

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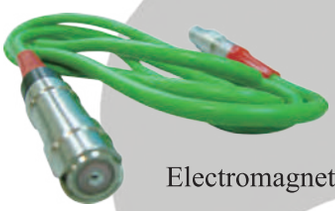
Using electromagnetic and eddy current thickness measurement methods and optional configuration of these two interchangeable probes, it can measure the non-magnetic coating on the magnetic metal substrate, the thickness of the coating and the non-conductive coating on the non-magnetic metal substrate.

In addition to the features of the general Coating Thickness Gauge, this instrument is also equipped with a printer device that can print test result data and can be connected to a computer by installing general software for data output, storage, report printing, etc.

Optional Probe



CTG-F

Electromagnetic probe (F type magnetic)

Measurement object
non-magnetic coating on magnetic metal

CTG-N

Eddy current probe (N-type non-magnetic)

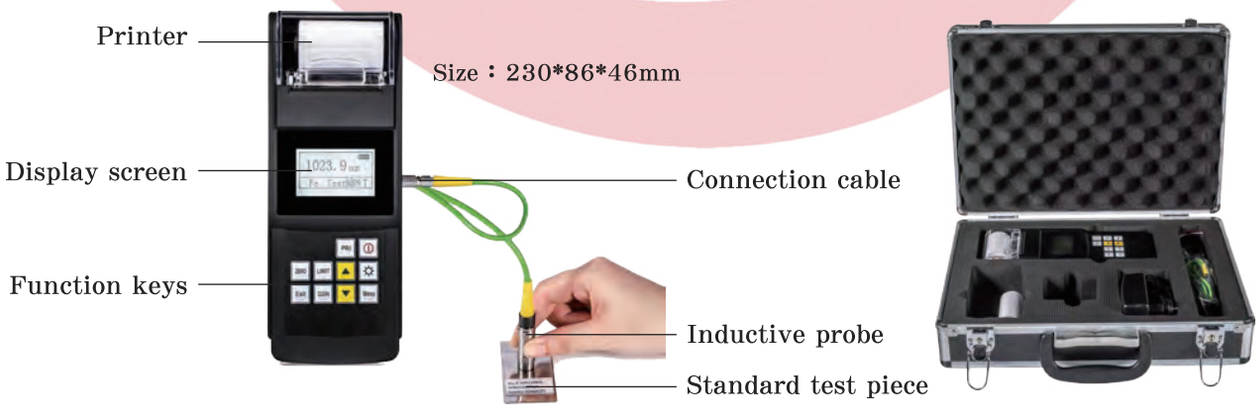
Measurement object
non-conductive insulating coating
on non-magnetic metal

Reference table of factors affecting test results

*Tap ✕ means not affected

Influence factor / measuring method	Magnetic method	Eddy current method	solution
Magnetic metal substrate	○	✕	Use standard parts with the same properties as the base metal of the test piece to calibrate the instrument
Conductive metal substrate	✕	○	Use standard parts with the same properties as the base metal of the test piece to calibrate the instrument
Thickness of substrate	○	○	Use greater than the critical thickness, the measurement will not be affected
Edge effect	○	○	Avoid measuring near the edge or corner of the specimen
Curvature	○	○	Avoid measuring on specimens with too small radius of curvature
Deformation of specimen	○	○	The probe avoids force to deform the soft coating of the test piece
Surface roughness	○	○	Increase the number of measurements and calculate the average value at different positions during measurement
Magnetic field	○	✕	Try to stay away from the strong magnetic effects produced by the measurement environment
Attached material	○	○	Adhering substances must be removed to ensure direct contact between the probe and the surface of the test piece
Probe pressure	○	○	The pressure of the probe applied during the test must be constant
Probe direction	○	○	Make sure that the probe is perpendicular to the surface of the test piece during measurement

Standard configuration Test main machine, optional F magnetic or N non-magnetic probe, substrate test piece, charger, standard test piece, packaging box



METROLOGY®

Ultrasound Thickness Gauge

American Society of Testing and Materials

Innovation Design R&D Patented Technology Award

UTG-9000 **Ultrasound Thickness Gauge is applicable for measuring the thickness of any material in which ultrasonic wave can be transmitted and reflected back from the other face.**

UTG-9000 **comply with** ***ASTM-E797*** **、** ***ISO-16809:2017 Non-destruction testing-Ultrasonic thickness measurement*** **international testing standards can provide quick and accurate measurement to various workpieces such as sheets of board and processing parts. Another important application of the gauge is to monitor various pipes and pressure vessels in production equipment, and monitor the degree of wear during using. It can be widely used in petroleum, chemical, mechanical, electronics, metallurgy, shipping, aerospace, aviation and other fields.**

Ultrasound Thickness Gauge

1.Shell 2.Keyboard 3.Monitor 4.Transmit & receive socket
5.Thickness calibration block 6.Ultrasonic probe

Primary Theory

The digital ultrasound thickness gauge determines the thickness of a part or structure by accurately measuring the time required for a short ultrasonic pulse generated by a transducer to travel through the thickness of the material,reflect form the back or inside surface, and be returned to the transducer.The measured two-way transit time is divided by two to account for the down-and-back travel path,and then multiplied by the velocity of sound in the material. The result is expressed in the well-known relationship:

$$H = \frac{v \times t}{2}$$

H—Thickness of the test piece
v—Sound Velocity in the material
t—The measured round trip transit time

Main Functions

1. Capable of performing measurements on a wide range of material, including metals,plastic,ceramics,composites,epoxies,glass and other ultrasonic wave well-conductive materials.
2. Can collocate variety different frequencies,wafer sizes of probes
3. Sound Velocity Calibration function as a known thickness
4. Coupling status indicator showing the coupling status
5. EL backlight, and convenience to use under dark environment
6. Have the battery indicator function, can real-time display the remaining power
7. Auto sleep and auto power off function to conserve battery life
8. Smart, portable,high reliability, suitable for bad environment, resist to vibration, shock and electromagnetic interference.

Ultrasound Thickness Gauge

Display interface：128*64 LCD with LED backlight, Colo display

Technical Specification

ASTM-E797、ISO-16809:2017 Non-destruction testing-Ultrasonic thickness measurement

Measuring Range	1～600mm（Materials: Steel, with Standard probe）
Resolution	0.01mm
Measuring unit	metric（mm）/ imperial（inch）switchable
Measuring accuracy	±（0.5%H+0.03）mm　H : thickness value of measurement
Velocity Range	1000~9999 m/s
Calibration function	Probe zero & two-point calibration function
Data storage	3000 sets of thickness measurement data
Communication	USB software interface data output
Warning function	Tips for upper & lower limit of thickness
Value mode	With the ability to capture the minimum thickness valve
Testing temperature	-10～60℃（workpiece surface）
Measurement cycle	Single point measurement 6 times/sec, scan mode 20 times/sec
Pipe measuremeat	Lower limit Φ20 mm×3.0 mm(5Mhz probe)；Φ15 mm×2.0 mm(7Mhz probe)
Indication error	≤±0.1 mm
Calibration standard	4.0 mm（steel）
Power	2pcs 1.5V AA size battery
Working Time	More than 250 hours（LED backlight off）
Dimensions	145mm×74mm×32 mm（L×W×T）
Weight	245g

*Remrk：Please refer to the operation manual for the measurement technology & precautions of the Ultrasound thickness gauge.

Standard Configuration

It is composed of three main components: Main body transmitting & receiving circuit、Color counting display、Standard Φ10mm 5Mhz double crystal probe

Working Conditions

Working Temperature：-20℃～+50℃　Storage Temperature：-30℃～+70℃　Working Humidity：≦90%
Enviromental requirements：There are no strong vibration in the surrounding environment, no strong magnetic field, corrosive medium & serious dust.