

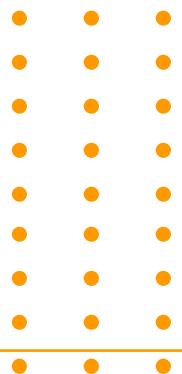
UCT-180 Series Ultrasonic Thickness Gauge Technical Solutions



BRK provides professional non-destructive testing solutions. Since its founding, the company has been dedicated to delivering high-quality instruments and expert services to meet customer demands in scientific research, industrial production, quality control, and related fields.

BRK's core strength lies in its continuous technological innovation and superior product quality. The BRK team comprises experienced and highly skilled professionals focused on advancing research and development in non-destructive testing. Combining technical expertise with a commitment to innovation, BRK serves clients worldwide with cutting-edge products and solutions.

BRK specializes in solving complex challenges by offering customized non-destructive testing solutions. As an industry pioneer, the company stays ahead of trends and technological developments. Its product portfolio includes ultrasonic flaw detectors, eddy current flaw detectors, coating thickness gauges, ultrasonic thickness gauges, Leeb hardness testers, surface roughness testers, gloss meters, industrial borescopes, and more. With a strong global reputation, BRK maintains an outstanding customer satisfaction rate of 95.7%.



BRK

One-Stop Supplier of Non-Destructive Testing Solutions

The factory under the BRK brand possesses complete production processes, sophisticated testing methods, and strong R&D capabilities. As a high-tech enterprise specializing in the development, production, sales, and service of non-destructive testing instruments, all products from portable NDT equipment to large-scale automated systems feature independent intellectual property rights. The company has applied for dozens of invention patents, utility model patents, and software copyrights, obtained the Intellectual Property Management System Certification, and was honored as a National High-Tech Enterprise in 2024.

Quality Testing

We collaborate with authoritative quality supervision institutions and utilize the most advanced high-performance testing equipment. All products undergo rigorous testing procedures to ensure stability and compatibility. Our scientific and meticulous quality inspection processes comply with national industry standards.

Quality Assurance

For any quality-related inquiries, we provide product origin certification. For specific customer requirements, we offer comprehensive laboratory testing services.

Quality Commitment

We guarantee top-tier product quality. Every product we provide is manufactured at our original facility, delivered in original packaging, and strictly adheres to professional quality standards. Our standardized, precise, and scientific management and monitoring processes ensure authenticity and premium quality at every stage.



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BRK Website

Part 1: Product Introduction



**UCT-180C Ultrasonic
Thickness Gauge**

**High Precision
& Wide Applicability**

**Portable Design &
Intuitive Operation**



**UCT-180B Ultrasonic
Thickness Gauge**

**Multi-Probe
Configurability**

**Automatic
Zero Calibration**

The UCT series wave thickness gauge is independently developed by Botech, using high-performance and low-power microprocessor technology. Based on the principle of ultrasonic measurement, it can measure the thickness of metals and various other materials, and can also measure the sound velocity of materials. It is possible to monitor various pipelines and pressure vessels in production equipment, monitor their thinning degree after corrosion during use, and accurately measure various plates and processed parts. This instrument can be widely applied in petroleum, chemical, metallurgy, shipbuilding, aviation, aerospace, and other industrial fields.

Part 2: Product Advantages

The UCT-180 Series Ultrasonic Thickness Gauge has become the tool of choice across diverse industries due to its:

- (1) High-precision measurement ($\pm 0.04\text{mm}$)
- (2) Multi-functional capabilities:
 - Multi-probe compatibility
 - Velocity calibration via reverse measurement
 - Real-time coupling status indication
- (3) User-centric interface:
 - Intuitive menu navigation
 - High-contrast EL backlight display
- (4) Extended battery life (200 hours)
- (5) Rugged durability (full aluminum alloy housing)
- (6) Data management (2,000 dataset storage capacity)

Designed to deliver reliable thickness monitoring and metrological accuracy, the BT-180 Series meets critical measurement demands in petroleum refining, chemical processing, metallurgical analysis, shipbuilding, aviation maintenance, and aerospace component inspection.

Key Features:

- ✓ The gauge is suitable for measuring the thickness of metals (e.g., steel, cast iron, aluminum, copper), plastics, ceramics, glass, fiberglass, and other ultrasonic-conductive materials.
- ✓ Can be equipped with various probes of different frequencies and chip sizes for use.
- ✓ The known thickness can be used to measure the speed of sound in reverse, in order to improve measurement accuracy.
- ✓ With coupling status prompt function.
- ✓ The device features an EL backlight display for enhanced visibility in low-light conditions.
- ✓ There is a residual battery indicator function.

- ✓Capable of automatic sleep, automatic shutdown, and other functions.
- ✓offers two shutdown modes (manual shutdown and auto-shutdown) for flexible power management.
- ✓Compact, portable, highly reliable, suitable for harsh operating environments, resistant to vibration, impact, and electromagnetic interference.
- ✓UCT-180B, delivers up to 200 hours of operational endurance (with backlight deactivated) through its lithium battery-powered system.

S/N	Ultrasonic Thickness Gauge Advantages	Other Thickness Gauges at the Same Price
1	Menu-driven interface; High-brightness EL LCD with LED backlighting	Segment-type EL display
2	Adjustable sound velocity for multi-material measurement	Fixed 5920 m/s preset (steel only)
3	Auto-recognition of multiple probes (standard, coarse-grained, small-diameter, high-temperature) without calibration	Manual probe selection (no auto-recognition)
4	Minimum thickness capture indication	No minimum thickness capture
5	2000-measurement data storage	20-50 data storage limit
6	Highly integrated single motherboard with imported chips	Dual-board design with domestic components

Part 3: Application

UCT-180 Series Ultrasonic Thickness Gauge

The working principle of the UCT-180 series ultrasonic thickness gauge is mainly based on ultrasonic pulse reflection. When the probe contacts and closely adheres to the measured object, it emits ultrasonic pulses. These pulses penetrate the object and travel through its interior. When the pulses encounter another interface (such as the material's back surface or boundaries between different materials), they reflect back to the probe. By precisely measuring the time taken from pulse emission to reception (travel time) and using the relationship between sound speed (the speed at which ultrasonic waves move through the material) and travel time, the gauge calculates the thickness of the object.



Measure thickness of hollow thin-walled structures



Measure ceramic wall thickness



Measure glass thickness



Measure plastic thickness

Application Fields

UCT-180 Series Ultrasonic Thickness Gauge is a high-performance, multifunctional instrument with extensive application coverage.

Manufacturing: Precisely measures thickness of metal sheets, pipes, and similar components to ensure product quality;

Petrochemical: Monitors wall thickness of pipelines, storage tanks, and related equipment to prevent safety hazards;

Aerospace: Evaluates structural integrity and safety of critical components through accurate thickness assessment;

Shipbuilding: Measures hull structure thickness and monitors corrosion levels.

Additionally, it is widely used in **power generation, construction, automotive manufacturing & maintenance**, and other industries, providing essential technical support for industrial production, scientific research, and educational purposes.

Material Sound Velocity Table

(subject to actual conditions, the list is for reference only)

Material	Velocity	
	in/ μ s	m/s
Aluminum	0.250	6340-6400
Steel, common	0.233	5920
Steel, stainless	0.226	5740
Brass	0.173	4399
Copper	0.186	4720
Iron	0.233	5930
Cast Iron	0.173-0.229	4400-5820
Lead	0.094	2400
Nylon	0.105	2680
Silver	0.142	3607
Gold	0.128	3251
Zinc	0.164	4170
Titanium	0.236	5990
Tin	0.117	2960
Acrylic resin	0.109	2760
Epoxy Resin	0.100	2540
Ice	0.157	3988
Nickel	0.222	5639
Plexiglass	0.106	2692
Porcelain	0.230	5842
PVC	0.094	2388
Quartz Glass	0.222	5639
Rubber, vulcanized	0.091	2311
Water	0.058	1473

Part 4: Technical Specification

UCT-180Series Ultrasonic Thickness Gauge		
Model	BT-180B	BT-180C
Range	0.65-600mm (Steel)	
Resolution	0.01mm	
Measurement Units	Metric/Imperial (selectable)	
Indicating Accuracy	<10mm:±0.04mm;>10mm:±0.5%H+0.01mm. H is the actual thickness of the measured object	
Sound Speed Range	1000~9999 m/s	
Display	High-contrast segment LCD with bright EL backlight	
Storage Capacity	2000 thickness measurement data	
Working Mode	Single point thickness measurement and scanning thickness measurement	
Work Environment	Operating Temperature:-20~+50°C;Storage Temperature:-30°C~+70°C;≤90%RH	
Measurement Cycle	4 times/second for single point measurement and 10 times/second for scanning mode	
Minimum measurable pipe dimensions	Φ20 mm×3.0 mm (5MHz probe); Φ15 mm×2.0 mm (7MHz probe)Measurement error: ≤±0.1 mm.	
Calibration	4.0 mm (steel)	
Probe specifications	Φ6 mm (optional), Φ10 mm (optional), Φ12 mm (optional)	
Source	AA alkaline battery 1.5v(2 cells)	
Operating time	>50 hours (backlight off)	
Dimensions	125*71*27 mm (L*W*H)	170*80*38 mm (L*W*H)
Weight	400g	255g

Part 5: Optional Probes and Parameters

Name	Model	Rate	Diameter	Measuring Range	Characterization	Application	Image
Standard Probe	N05	5	10mm	1mm~600mm(steel)	-10~60℃	Normal Temperature use (<60℃)	
Coarse Crystal Probe	N02	2	12mm	3mm~300mm (steel) 5mm~40mm (cast iron)	-10~60℃	Used for measuring coarse-grained materials such as cast iron	
Microcrystalline Probe	N07	7	6mm	0.65~260mm (steel)	-10~60℃	Used for measuring thin-walled and small curved surfaces	
			4mm				
High Temperature Probe	HT5	5	14mm	3mm~200mm (steel)	-10~400℃	Used for measuring materials with temperature below 350℃	

Part 6: Accessories

Packing List *

UCT-180Series Ultrasonic Thickness Gauge				
S/N	Item Name		Remark	Qty
1	UCT-180B Host	UCT-180C Host		1
2	Standard Probe		5MHz	1
3	Couplant			1
4	ABS Instrument Box			1
5	Instrument Material			1
6	Charger and charging cable	Alkaline battery	AA	2
7	Small Diameter Probe(Optional)		2MHZ	
8	Micro-diameter Probe(Optional)		7MHZ	
9	High-Frequency Probe(Optional)		10MHZ	
10	Other Specialized Probes(Optional)		Customization	
11	High-Temperature Couplant(Optional)		50g	1
12	High-Temperature Probe(Optional)		Temperature Range: 0-250℃ 0-350℃ 0-450℃	

* This table is for reference only. Final contents are subject to the actual packing list.

Part 7: Instrument Maintenance

1. Electromagnetic Interference Prevention

Install the instrument in environments free from strong electromagnetic interference. When necessary, install certified grounding devices and enhance shielding facilities to suppress signal interference and ensure stable operation.

2. Power Connection Requirements

Connect only to specified power supplies with peripheral devices. Prohibit opening the housing or inserting hands/tools during operation to prevent personal injury or equipment damage.

3. Post-Operation Maintenance

Cover with dust-proof cover after use.

During humid seasons, power on for 1-2 hours weekly to dissipate internal moisture. In the event of abnormal instrument operation, users should first thoroughly review the user manual to verify correct operating procedures, and may consult experienced personnel or the manufacturer for guidance. Under no circumstances should unauthorized disassembly or repair attempts be made, as this may lead to unnecessary complications. Should any inquiries or assistance requirements arise during usage, please contact us via written correspondence or telephone communication. We guarantee prompt response to all service requests.

Part 8: Quality Assurance

1. Quality Assurance

The quality assurance period is one (1) year from the date of final acceptance and signing.

2. After-Sales Service

- (1) Under normal circumstances, the seller guarantees to respond within 24 hours upon receiving the user's after-sales service request (including a fault description) via phone, fax, or email, providing troubleshooting and fault resolution.
- (2) During the warranty period, the manufacturer shall provide free after-sales service and respond to user notifications within 8 hours.

Part 9: Supplementary Provisions

The seller warrants that the buyer shall not face any third-party claims of patent, trademark, or industrial design infringement while using the purchased testing equipment or any part thereof. If any third party raises an infringement claim, the seller shall handle

the dispute and bear all legal liabilities and costs.

This agreement is an integral part of the sales contract. In case of any conflict, the terms of the sales contract shall prevail.

Matters not covered herein shall be resolved through amicable negotiation between both parties.

This agreement becomes effective upon signing by both parties. It is executed in duplicate, with each party holding one copy of equal legal validity. Faxed or scanned copies are equally binding.

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