discory
迪斯凯瑞

DT600 Ultrasonic Thickness Gauge

Haian Discory Detecting Instrument CO., Ltd

Preface

Thank you for choosing the DT600 Series Ultrasonic Thickness Gauge. It is our great pleasure to have you as a user of the Haian Discory Detecting Instrument CO. In order for you to become proficient in the use of this instrument, we have included an instruction manual with the instrument.

This manual is an important part of the instrument and provides operating and safety guidelines for the proper use and maintenance of the instrument. Before using the instrument for the first time, be sure to read this manual carefully to understand the instrument's performance and fully utilize its functions. After reading this manual, please keep it in a safe place for future reference.

The contents and specifications of this manual are subject to change when necessary. Haian Discovery Detecting Instrument CO., Ltd reserves the right to improve and innovate the instrument at any time without prior notice.

1、Call the company's after-sales service line: 400-012-6866.

2、Send an email to the company's email address:
postmaster@dscr.com.cn.

3、Log on to the company website for inquiry: http://www.dscr.com.cn.

Thanks for your cooperation!

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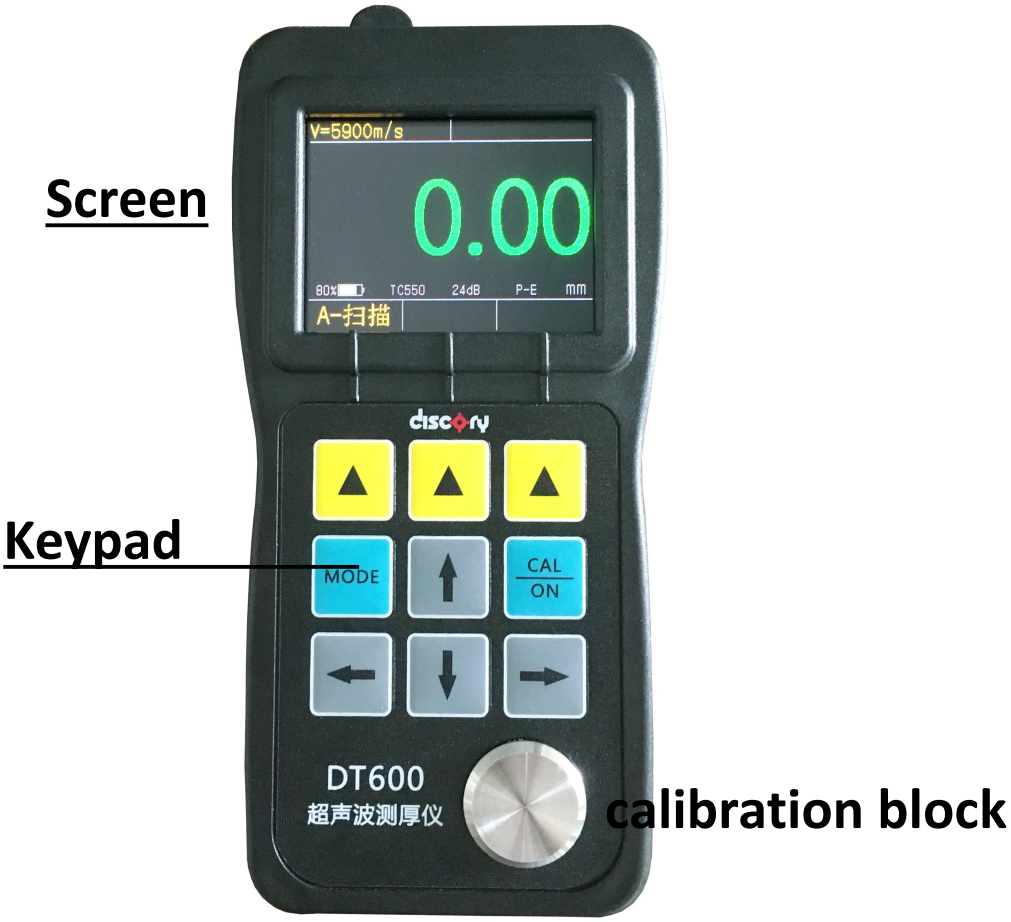
1.1 Composition of the instrument



1.2 Standard configuration

Name	Quantity
Host	1 pc
Probe	1 pc
Alkaline battery	2 pcs
Coupling agent	1 bottle
Instrument sealed case	1 pc
Instruction manual	1 copy

1.3 Optional parts

High-temperature probes	Cast Iron Probes
Small diameter pipe probes	Miniature Probes
Probe wire	Stepped test blocks
Rubber sheath	

1.4 Technical parameters

Display	2.4QVGA (320x240) color OLED screen with 10000:1 contrast ratio
Working Principle	Ultrasonic pulse/echo method using single crystal probe
Measuring range	0.6 to 508 mm (0.025 to 20.00 inches)
Measurement resolution	0.01 or 0.1mm (0.001 or 0.01in)
Measurement error	+0.05 (below 10mm), ±(0.5%H+0.01) (above 10mm)
Unit	Millimeter or inch
Display mode	A-scan mode, B-scan mode, thickness value mode, min/max capture mode, difference/scaling rate mode
V-path correction	Automatic V-range correction to compensate for non-linearity of double crystal probe
Measurement update rate	4HZ, 8HZ, 16HZ per second optional
Material speed of sound range	500-9999m/s, 0.0179-0.3937in/u
Working language	Chinese / English / French / German / Japanese (optional)
Alarm settings	Maximum/minimum value alarm, dynamic change of thickness reading color when the alarm
Power Supply	Two 1.5V AA batteries
Operation	Two AA batteries, use time more than 35 hours

time	
Instrument shutdown	Optional automatic shutdown after 5, 10, 20 minutes of no operation, or manual shutdown only
Operating temperature	-10 to +50℃, with special requirements up to -20℃
Dimension	153mm×76mm×37mm (H×W×D)
Weight	With battery 280g

1.5 Main Functions

1. Simple and easy to operate Parameter configuration interface

2. Adjustable real-time A-scan, adjustable gain, gate, fade, range, pan, and other parameters

3. Time-based B-scan function, displaying the section of the workpiece, used to observe the bottom profile of the measured workpiece

4. Numerical view, with large numbers to display the thickness value

5. Thickness alarm: thickness limit can be set, and the measurement value outside the limit is automatically alarmed

6. Most value mode: capture the maximum and minimum values in the measurement process

7. Difference mode: obtain the difference between the current thickness measurement value and the nominal thickness and the percentage of the difference, and the nominal thickness

8. Support two thickness units of millimeter and inch

9. User-selectable measurement resolution X.XX and X.X in the metric system, and X.XXX and X.XX in the imperial system

10. User-selectable waveform style: profile line or fill

11. User-selectable rectification modes: RF, inverted RF, full-wave, negative half-wave, positive half-wave

12. Multi-language interface selectable

13. Standby time: ultra-long standby, up to 35 hours

14. Can penetrate the surface of the workpiece coating, directly measure the thickness of the substrate workpiece

2、Understand keyboard functions

The DT-600 has a total of nine keys on the keyboard, including three virtual screen keys ( ), four directional keys （ ）, two dedicated function keys（ ）. For details, see the following figure (Figure 2.1)

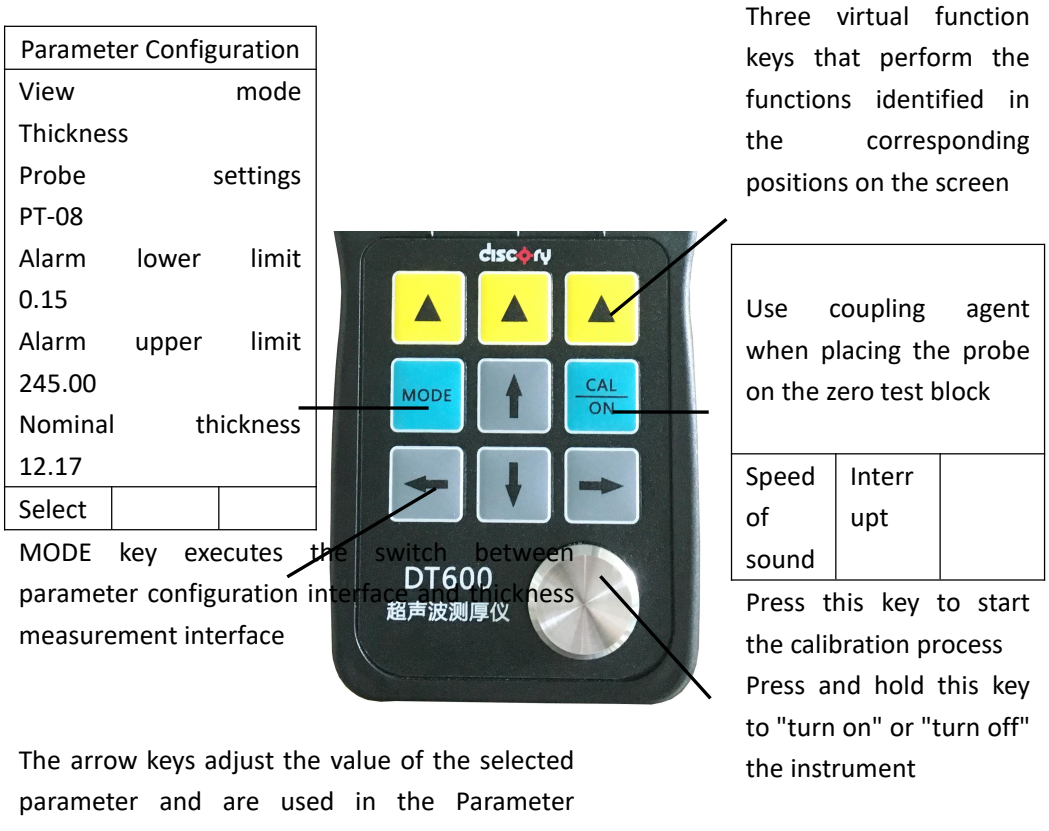


Figure 2.1 Keyboard function introduction

3. Thickness measurement

3.1 Instrument Calibration

Before using the DT-600 series, the instrument and the probe need to be calibrated. The purpose of calibration is to zero the probe and to find out the speed of sound of the material to be measured. Before starting the calibration process, it is important to first set the correct probe type. The DT-600 is calibrated in the following ways:

1. Probe zeroing. Use the zero test block that comes with the instrument to zero the probe.

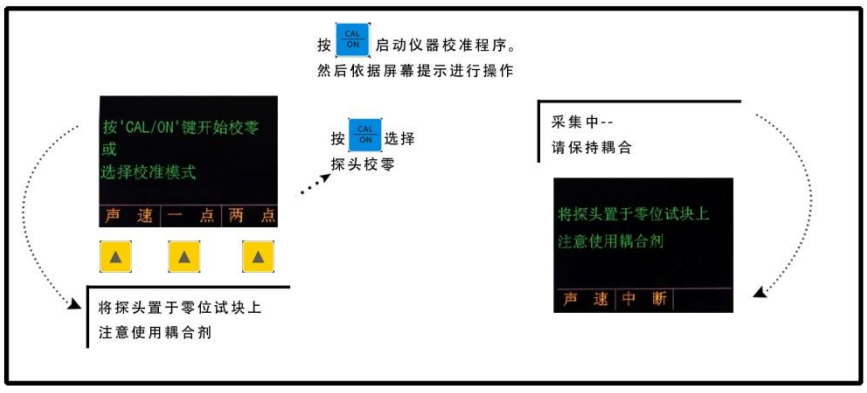
2. One-point calibration. Firstly, use the zero position test block to zero the probe, then find out the speed of sound of the test block on a standard test block of known thickness prepared by the user.

3. Two-point calibration. In the user's own two standard test blocks of the same material and known thickness, find out the zero point of the probe and the speed of sound of the test block.

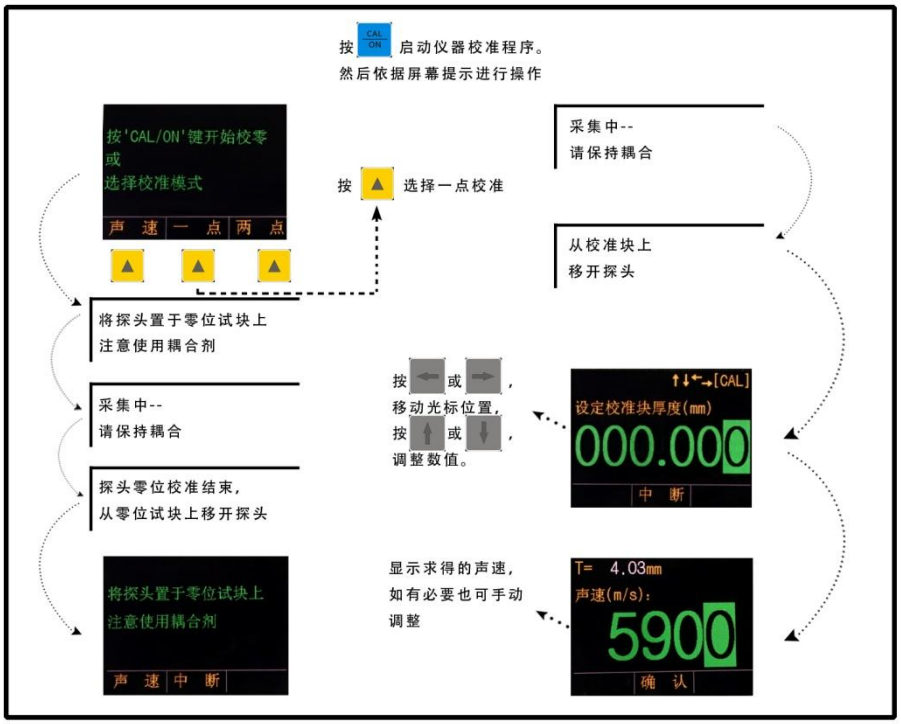
4. Double-echo calibration. On a standard test block of known thickness prepared by the user, find out the speed of sound of the test block.

5. Manually set the speed of sound. When you know the speed of sound of the material, for example, the speed of sound of steel is 5900m/s, you can manually input the speed of sound.

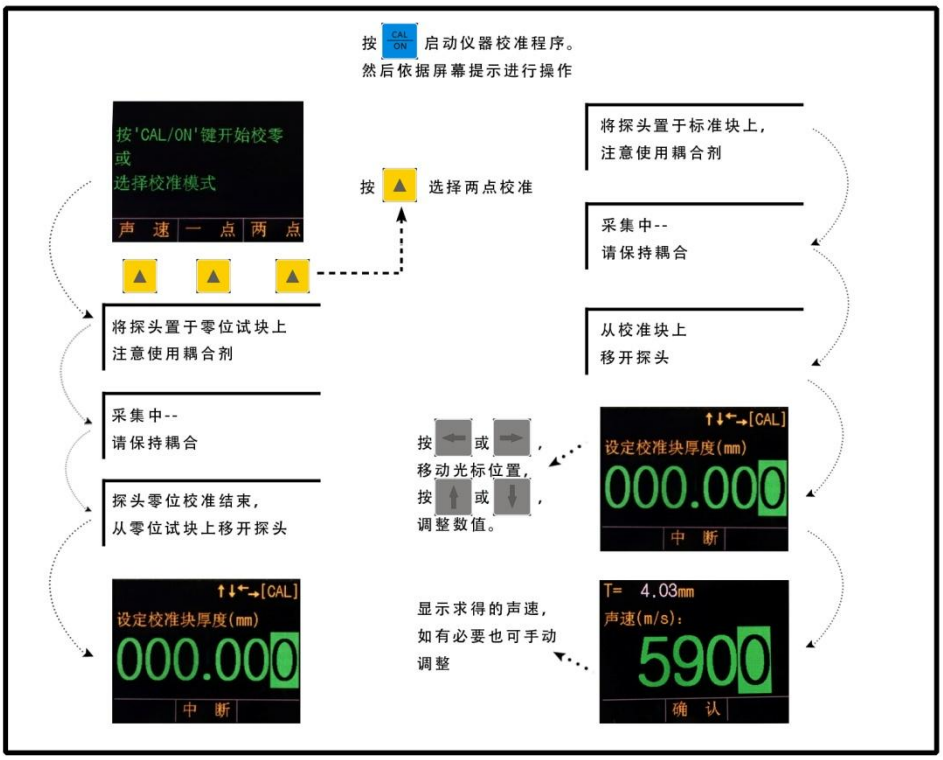
3.1.1 Probe zero calibration



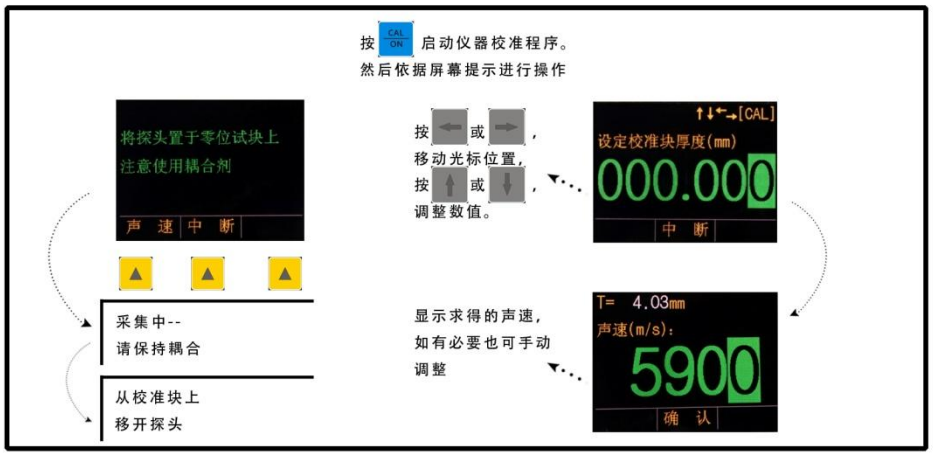
3.1.2 One-point calibration



3.1.3 Two-point calibration



3.1.4 Dual-echo calibration



3.1.5 Adjust of the speed of sound

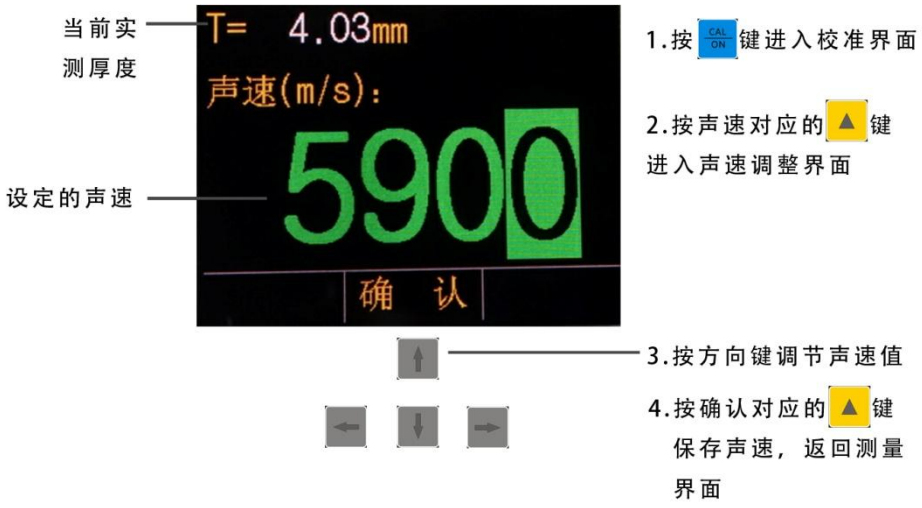


Figure 3.1 Adjustment steps of the speed of sound

Note 1: Before calibration, measure the standard test block to ensure that the currently set instrument parameters can correctly measure the standard test block.

Note 2: Probe zero calibration, one-point calibration, and two-point calibration are applicable to single-echo mode, and double-echo calibration is applicable to double-echo mode.

3.2Parameter configuration interface

Press MODE to display the Parameter configuration interface, which has several options for parameter adjustment, including measurement mode, view mode, probe settings, lower alarm limit, upper alarm limit, nominal thickness, B-scan minimum, B-scan maximum, rectification mode, waveform style, resolution, update rate, language, units, auto power-off, and restores factory settings. The following figure shows the factory settings.

Refer to the following figure (Figure 3.2)

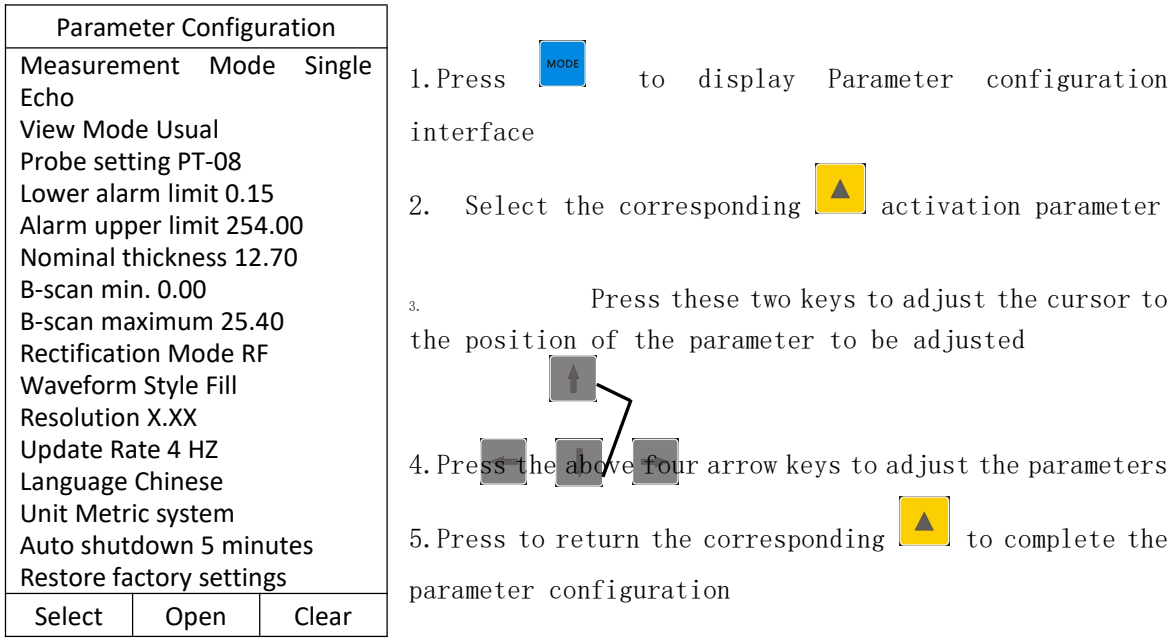


Figure 3.2 Parameter adjustment steps

Measurement Mode—There are 2 modes: single-echo and dual-echo. Single-echo mode is selected for general measurement, and dual-echo mode is set when using the penetrating coating function.

View Mode—This parameter is divided into usual mode, difference mode, and most value capture mode.

Probe settings—A variety of probe models are available in the probe setup.

TC510 (special probe for penetrating coatings, standard probe for DT600).

PT-08 (common probe, standard probe for DT300).

PT-06 (small diameter pipe probe).

PT-04 (miniature probe).

GT-12 (high-temperature probe).

ZT-12 (cast iron probe).

PT-12 (common probe).

Alarm lower limit - Set the minimum thickness alarm value. The setting range is 0.15-635mm. If the measured thickness is less than the lower alarm limit, the measurement data is displayed in red font.

Alarm upper limit-Sets the maximum thickness alarm value. The setting range is 0.15-635mm. If the measured thickness is greater than the upper alarm limit, the measurement data is displayed in red font. Note: The upper limit of measurement must be greater than the lower limit of measurement.

Nominal thickness-Set the nominal thickness value. The setting range is 0.15-635mm. Refer to the introduction of different mode for specific applications.

B-scan minimum sets the minimum thickness value of the B-scan image.

The B-scan maximum value sets the maximum thickness value of the B-scan image.

Rectification mode—Rectification mode is divided into RF, full-wave, negative half-wave, positive half-wave, and inverted RF. RF depicts the complete echo waveform. Full-wave means that both the positive half-wave of the return and the negative half-wave, which is flipped to positive are shown. A negative half-wave means that the positive half-wave of the echo is removed, and the negative half-wave is flipped to positive. A positive half-wave means removing the hoard wave's negative half-wave and displaying only the positive half-wave. Inverted RF refers to the inverted phase waveform of the RF waveform.

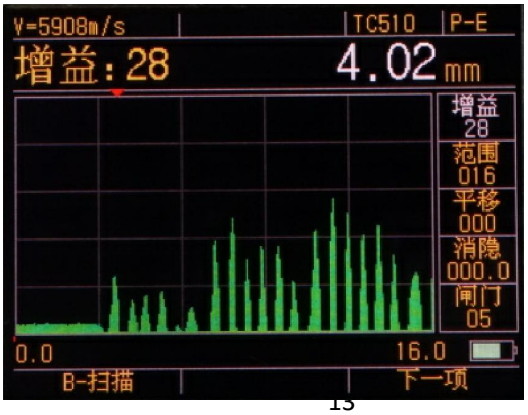


Figure 3.3 Half-wave rectification

Waveform Style-There are two options for waveform style: profile line and fill.

Resolution-sets the number of decimal places for the measurement result. The Metric system is divided into X.X and X.XX. The imperial system is divided into X.XX and X.XXX.

Update rate-the rate of updating measurement results, user can set 4Hz, 8Hz, or 16Hz.

Language - Set the language of the instrument screen display. Generally, only one language is installed. If you need other languages, please contact the factory.

Unit-Set the measurement unit in the metric/imperial system.

Auto shutdown - The instrument will automatically shut down after a certain period of time without operation, either 5 minutes, 10 minutes, 20 minutes, or manually only.

Restore factory settings-Restore the default settings when the machine is shipped from the factory.

3.3 Numerical display mode

The DT-600 series has three measurement interfaces: Numerical Interface, A-scan Interface, and B-scan Interface, of which the Numerical Interface has three display modes: Thickness Mode, Difference/Scaling Mode, and Maximum/Minimum Mode. The numerical interface has three display modes: thickness mode, difference/scaling mode, and maximum/minimum mode, which can be selected in the "View Mode" of the Parameter configuration interface.

In the case of no coupling between the probe and the measured body, the thickness value of each sector is displayed in green font.

In the case of good coupling, it is displayed in white font. When the alarm range is exceeded, it is displayed in red font.

Thickness value mode- That is, the default interface, which displays the current measured thickness value in large font.

Figure 3.5 Interface diagram of thickness value mode

1-Current thickness measurement value

2-Probe type, gain level, single echo, measurement unit in order

3-Thickness measurement material speed of sound

4-Battery power display

5-A-scan Interface logo

Difference/scaling rate model—This screen displays the difference (the difference between the measured thickness value and the nominal thickness) and the reduction rate (the percentage of the difference to the nominal thickness). Also, it shows the current value of the measured thickness value and the nominal thickness. The nominal thickness must be set before the thickness can be measured in difference mode, as described in section 3.2.

Figure 3.6 Differential mode interface diagram

1-Difference between the measured thickness and the nominal value

2-The percentage of a difference to the nominal value

3-Current thickness measurement value

4-Nominal value

5-Deviation mark

6-Thickness measurement material speed of sound

7-Battery power display

8-A-scan Interface logo

9-Probe type, gain level, single echo, and measurement unit in order

Maximum/minimum mode- This mode captures the minimum and maximum thickness values in real-time while the user continuously inspects the thickness of the material. This screen shows the minimum and maximum thicknesses detected during the inspection process and the current measured thickness. The maximum value can be recaptured during the thickness measurement by pressing the key corresponding to "Reset."

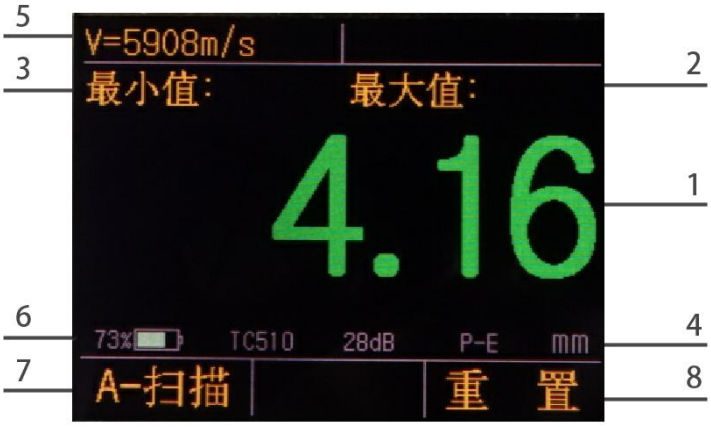


Figure 3.7 Most Value Mode Interface Diagram

1-Current thickness measurement value

2-Maximum value detected

3-Minimum value detected

4-Measurement unit

5-Thickness measurement material speed of sound

6-Battery power display

7-A-scan Interface logo

8-Reset logo

3.4 A—Scanning Interface mode

A-Scan mode can be used to view Thickness measurement values and A-scan waveforms simultaneously. On the right side of the interface is the parameter adjustment area, which allows you to adjust the parameters to maximize the solution for a variety of difficult thickness measurement applications.

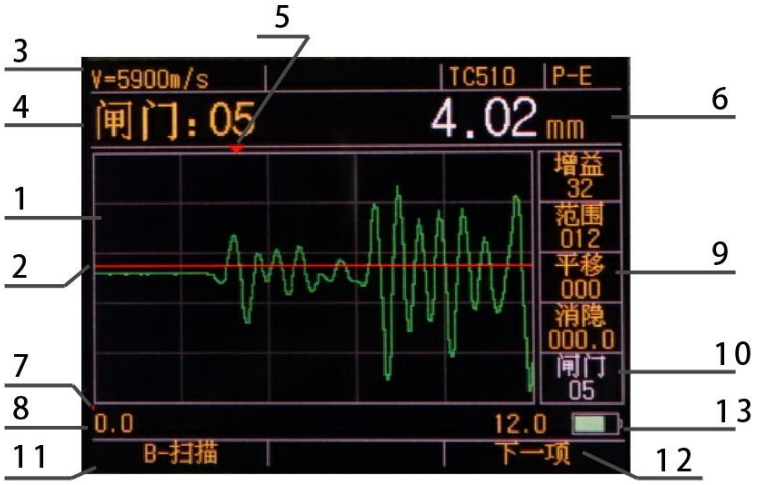


Figure 3.8 A-scan Interface introduction

1-Waveform display area

2-Gate

3-Thickness measurement material speed of sound

4-Enlarged display of the selected parameter

5-Measurement point (i.e., the first intersection of the waveform and the gate)

6-Current thickness measurement value

7-Fade range marker

8-The starting coordinates of the screen

9-Parameter adjustment area

10-Currently selected parameters

11-Large numeric mode logo

12-Parameter selection mark

13-Battery level display

Note: In the case of no coupling between the probe and the measured object, the

thickness reading is displayed in the green font; in case of good coupling, the thickness reading is displayed in the white font; in case of exceeding the alarm range, the thickness reading and the A-scan waveform are displayed in red font.

In the A-scan Interface, the cursor is moved to the position of the parameter to be adjusted by pressing the  key corresponding to NEXT in the lower right corner of the screen, and the parameter value is adjusted by pressing the arrow keys. The up and down keys are for small step adjustment, and the left and right keys are for large step adjustment.

Increase—Adjusts the instrument's amplification of the echo signal, allowing it to be manually increased or decreased in 1 dB steps. This feature is very effective for measurements of acoustically attenuated materials such as metal castings.

Scope—Adjust the range of the waveform displayed on the screen. The waveform is compressed or expanded visually. If the display range is not set correctly, the echo waveform may go out of the display area and not be seen, but the measured value is still displayed correctly.

Panning—Adjust the start position of the waveform displayed on the screen to visually shift the waveform horizontally. If the panning is not set correctly, the echo waveform may go out of the display area and not be visible, but the measured value is still displayed correctly.

Retreat into hiding—Invalidating waveforms within the range of the red fading bar allows the omission of harmful clutter that affects the measurement. Practical measurements sometimes encounter material-related mismeasurement appearances, such as high corrosion near the surface, aluminum materials, internal defects, material internal inhomogeneities or stacked sheet structures, etc. If we use the method of adjusting the gain or gate, it can also solve part of the problem. However, if these echoes are even larger than the echoes on the bottom surface, then only the fading function can avoid such errors.

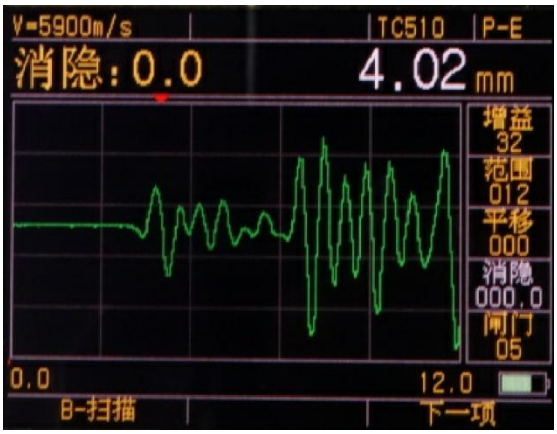


Figure 3.9 Waveform before fading

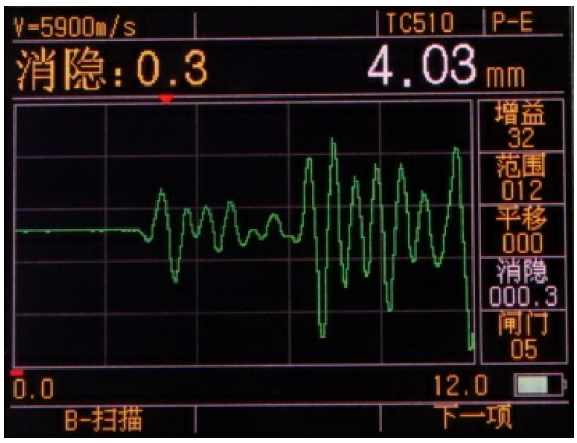


Figure 3.10 Using fading to omit front noise

Gates—Adjust the height of the gate. Note that only when the waveform is higher than the gate, the instrument thinks that the echo is received and the measured value will be available. Also, the gate will only be displayed when the cursor is reversing the gate parameter. The first intersection of the waveform and the gate is indicated by a red arrow, which helps to determine whether the thickness reading is correct or not. When measured correctly, the red arrow should point to the first bottom echo front.

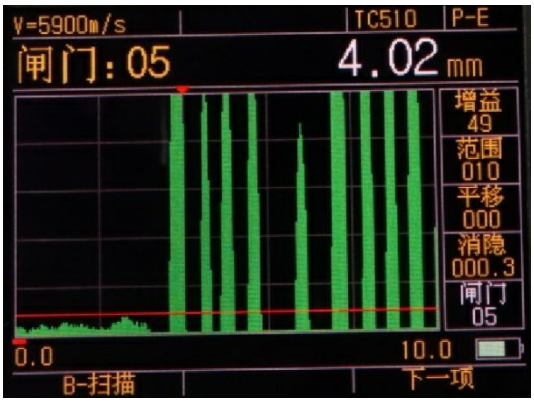


Figure 3.11 Waveform diagram of thin plate measured by PT04 probe

3.5 A-scan example explanation

1. In the thickness measurement process, there are often cases where the thickness measurement value is not accurate due to the gain being too small. As shown in the

figure below, the actual thickness of the test block is about 5mm. Still, because the gain is too small, the primary echo does not break through the gate, the gate automatically locks the secondary echo, and the measured thickness value is 10.77mm, which is obviously wrong, the user can adjust the gain, pull up the wave height, so that the primary echo breaks through the gate to achieve the correct measurement.

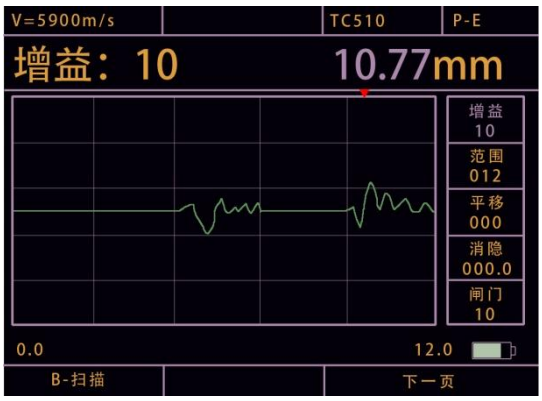


Figure 3.12 Example illustration 1

There is a defect in the test block. The gate locked the defect wave. In the figure below, the thickness of the test block is about 10mm, but due to the obvious defect in the test block, the defect wave can be seen on the screen, and the defect wave has broken through the gate at this time the instrument detects the thickness value at the defect. The user can raise the gate so that the gate is away from the defect wave to achieve the correct measurement.

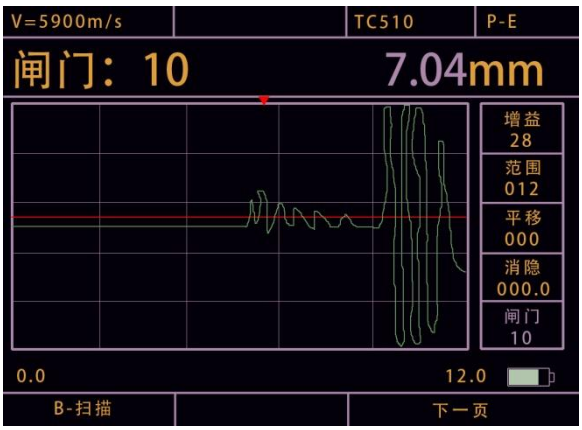


Figure 3.13 Example illustration 2

3. There is a defect in the test fast. The gate is locked to the defect, and the

thickness value obtained is the thickness at the defect. At this point, the user is allowed to use the fading function to achieve the correct measurement. In the figure below, the horizontal line from left to right below the coordinates marks the fading range, which we use to shield the defect wave. The gate does not capture the echoes within the fading range, thus getting the correct thickness measurement value.

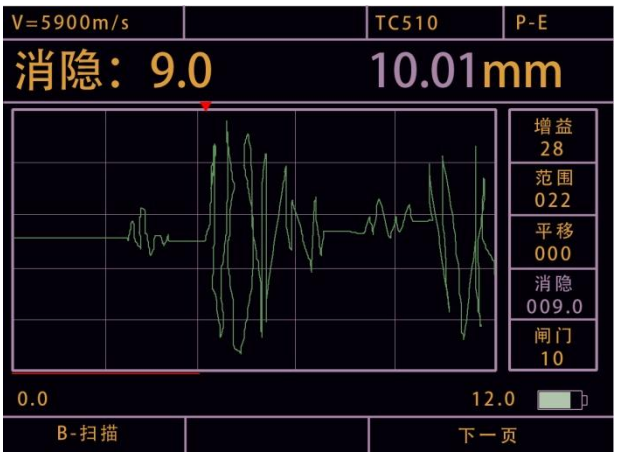


Figure 3.14 Example illustration 3

3.6 Operation of B-scan interface

3.6.1 B-scan Interface

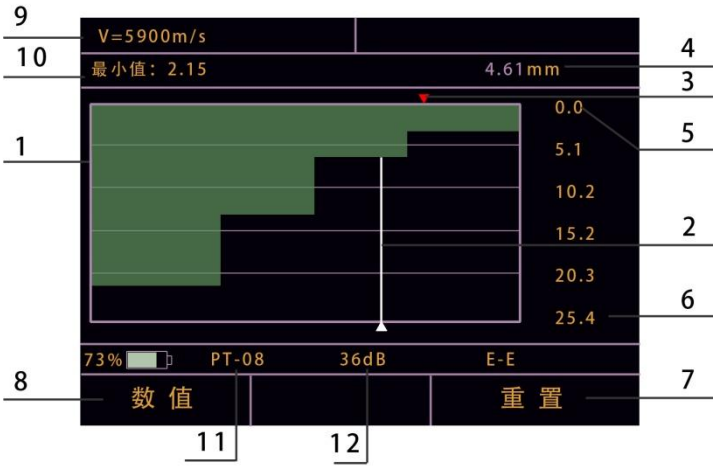


Figure 3.15 B-scan Interface figure

1-B-scan image display area

2-White pointer

3-Red triangle (indicates the location of the minimum thickness value)

4-Thickness value at the position indicated by the pointer

5-Minimum value of the B-scan image

6-The maximum value of the B-scan image

7-Clear the current B-scan image and the measured value

8-Access to the numerical measurement interface

9-Speed of sound

10-Minimum value on the B-scan image

11-Parameter display area

12-Gain value

3.6.2 B. Scanning Introduction

DT-600 series thickness gauge comes with a time-based B-scan function. The probe is moved along the surface of the workpiece to display the profile of the workpiece, which is used to observe the bottom profile of the workpiece being measured. The minimum value on the B-scan image is automatically captured when the probe leaves the workpiece, and a red triangle indicates the location of the minimum value. The thickness value of any point on the B-scan image can be viewed by moving the white pointer.

3.7 Dual-echo (penetrating coating) measurement mode

When there is a coating or paint layer on the surface of the workpiece, it can cause a considerable error in the measurement results. The DT-600D and DT-600DL Measurement Method with echo one echo can accurately measure the actual thickness of the substrate under the workpiece coating without the need to destroy the surface of the workpiece, such as sanding the coating. This function is achieved by measuring the two consecutive bottom echoes of the substrate.

By selecting the measurement mode in the Parameter configuration interface and setting the measurement mode to dual-echo, you can measure the penetration of the

coating.

3.7.1A-scan Interface in dual-echo mode

A-scan Interface in Dual Echo Mode The options in the right menu have changed, with the addition of the E-Fading (echo fading) option and the removal of the gate option. The blue bar in the measurement indicates the length of the echo fading, and the waveform above the blue bar is invalid, as shown in Figure 3.16 below.

Figure 3.16A-scan Interface in Dual Echo Mode

1-Double echo measurement mode logo

2-Blue arrow indicates the secondary echo

3-Echo fading

4-Blue line: the length of the echo fading

5-Red line: the length of the initial fading

6-Red arrow indicates the primary echo

Fading in dual-echo mode:

1. Start fading: It is indicated by a red fading bar on the screen, starting from the zero point, so it is called start fading. The waveform within the red bar is invalid and is used to omit the noise between the start point and one echo.

2. E-fade (echo fade): It is indicated by a blue fade bar on the screen and will only appear when the measurement is successfully carried out, starting from the

measurement point of the first echo, so it is called echo fade. The waveform within the blue bar is invalid and is used to omit the noise between the primary and secondary echoes.

Note: The instrument is free of zero calibration in the dual-echo measurement mode. If you need zero calibration, please enter the single-echo measurement mode.

4. Applied Technology

4.1Prevention of measurement errors

1. Impact of materials

In many test materials, such as non-metals or plastics, the variation in the speed of ultrasound propagation is very significant and can affect the measurement's accuracy. If the material to be measured is not isotropic, then the speed of sound will vary in different directions. In this case, the average value of the speed of sound within the detection range must be used for the calculation. The average value is obtained by measuring a reference block whose speed of sound is comparable to the average speed of sound of the block to be tested.

2. Ultra-thin materials

In the use of Ultrasonic Thickness Gauge, when the thickness of the material to be measured drops below the lower limit of probe use, it will lead to measurement errors. If necessary, the minimum limit thickness can be measured by the test block comparison method.

When measuring ultra-thin materials, an erroneous result called "double refraction" sometimes occurs, which shows that the reading is twice the actual thickness. Another error result is called "pulse envelope, cycle jump." Its result is that the measured value is greater than the actual thickness. In order to prevent this kind of error, pay attention to the waveform display when measuring the critical thin material. If it can be judged, the error reading can be eliminated by adjusting the gain or using the blanking function.

3. Effect of surface cleaning

Before measurement, all dust, dirt, and rust on the surface of the measured object

shall be removed, and paint and other covers shall be removed.

4. Influence of roughness

The excessively rough surface will cause measurement error and even no reading of the instrument. Before measurement, try to make the surface of the measured material smooth, which can be made smooth by grinding, polishing, filing, and other methods. High viscosity couplants can also be used.

5. Rough machined surfaces

Rough machining surface (such as lathe or planer) caused by the regular fine groove will also cause measurement errors to make up for the same method as 4, in addition to adjusting the probe insulation layer (through the probe bottom center of the thin metal layer) and the measured material between the angle of the fine groove, so that the spacer plate and the fine groove perpendicular or parallel to each other, take the smallest value in the reading as the measured thickness, can achieve better results.

4.2 Measurement Method

1. Single point measurement method

The measurement is performed using the probe at any point on the measured body, and the displayed value is the thickness value.

2. Two-point measurement method

Two measurements are made with the probe at the same point of the measured body. In the second measurement, the probe is split at 90° , and the smaller of the two measurements is taken as the thickness value.

3. Multi-point measurement method

When the measured value is unstable, multiple measurements are taken in a circle with a diameter of about 30 mm, centered on a measurement point. The minimum value is taken as the thickness value.

4. Continuous measurement method

Using the single-point measurement method, continuous measurement along the specified line, the interval is not less than 5mm, taking the smallest of which is

the thickness value.

4.3 Pipe wall measurement

When measuring, the probe split surface can be measured along the axis of the pipe or perpendicular to the axis of the pipe, respectively. At this time, the reading on the screen will have regular changes. Choose the minimum value in the reading as the exact thickness of the material.

If the pipe diameter is large, it should be measured in the direction of the vertical axis. When the pipe diameter is small, two types of Measurement Method should be chosen: along the axis direction and in the vertical axis direction. The smallest value in the reading should be taken as the thickness value of the workpiece.

4.4 Casting measurement

The measurement of casting materials has its own peculiarities. Casting material grain is coarse, the organization is not dense enough, plus often in the gross state on the measurement so that the measurement encountered greater difficulties. Therefore, Casting measurement should pay attention to the following points.

1. Use a low-frequency probe, such as our ZT-12 probe.

2. When measuring the surface of the casting without processing, it is necessary to use the viscosity of oil, grease, and water glass as a coupling agent.

3. It is best to use the same material to be measured. The measurement direction and the measured object are also the same standard test block calibration material speed of sound.

5. Maintenance and Repair

5.1Power check

When the instrument cannot be turned on, the battery should be replaced first. The battery replacement method is as follows.

1. Turn off the machine

2. Loosen the screws and open the battery compartment cover

3. Remove the battery and put in a new battery. Pay attention to the polarity

Note: The battery should be removed when the instrument is not in use for a long time because even if the power is off, there is weak energy consumption, and after a long time, the battery will not be able to turn on after running out of power.

5.2 Cautions

1. When using the random test block to test the instrument, it is necessary to apply a coupling agent, so please pay attention to rust prevention. Wipe the random test block clean after use. Do not get sweat when the temperature is high. When not used for a long time, apply a little grease on the surface of the random test block to prevent rust, and when used again, wipe off the grease and then work normally.

2. Alcohol, diluent, etc., have a corrosive effect on the housing, especially the window, so when cleaning, wipe with a small amount of water can be.

3. The probe surface should avoid heavy scratching, lightly press the measurement. If the probe wear, the measurement will appear unstable value, the probe should be replaced.

5.3 Maintenance

If the following problems occur, please contact our Maintenance Department.

1. The instrument is damaged and cannot be measured.
2. The display is not normal.
3. The error is too large in normal use.
4. The keyboard operation is malfunctioning or confusing.

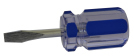
Since DT600Ultrasonic Thickness Gauge is a high-tech product, maintenance work should be done by professionally trained maintenance personnel. Please do not disassemble and repair by yourself.

Appendix: Speed of sound of various materials

Media material	speed of sound(m/s)
Aluminum	6320
Chromium	6200
Copper	4700
Gold	3240
Iron	5930
Lead	2400
Magnesium	5750
Silver	3600
Steel	5900
Titanium	5990
Zinc	4170
tungsten	5174
Tin	3320
Brass	4280-4700
Cast Iron	4400-5820
Glass	5260-6120
Nylon	2680
Stainless steel	5740
Water(20℃)	1480
Glycerin	1920
Sodium silicate	2350

Instrument packing list

Packing date: Year Month Date

Serial No.	Item Name	Instrument No.	Unit	Quantity	Instrument pictures
1	Main Machine		pc	1	
2	Probe		pc	1	
3	Alkaline batteries		pc	2	
4	Coupling agent		bottle	1	
5	Screwdriver		pc	1	
6	Attached file with the certificate of conformity		set	1	

Supervisor: Packer: Checker:

Inspection Certificate

Haian instrument No. 325

Manufacturer：Haian Discory Detecting Instrument CO.,Ltd

Product Name：Ultrasonic Thickness Gauge

Specification Model：

Factory No.：

Test conclusion：

Supervisor：

Inspector：

Verifier：

Inspection date: Year Month Date

Validity period: one year

Product Warranty Card

Filling date Year Month Date

Product Name	Ultrasonic Thickness Gauge	Date of purchase	
Model		Factory Number	
Purchase unit		User Name	
Contact number		Mobile phone	
Contact address		Postcode	

Maintenance Record

Number of repairs	1	2	3
Failure phenomenon			
Treatment			
Maintenance date			
Maintenance personnel			

Warranty Card Description:

I. Warranty period: one year from the date of sale.

II. Warranty conditions: the user in full accordance with the provisions of the manual operation and custody of the instrument, within the warranty period due to quality problems and failure, the user with a warranty card or a valid invoice to give warranty.

III. The following cases to implement paid Maintenance: (1) can not present the

warranty card or

(1) can not produce a warranty card or a valid invoice.

(2) the user's own disassembly, maintenance, modification of the instrument caused by instrument failure.

(3) the instrument due to improper storage caused by the failure.

(4) The user due to human damage, improper operation, or irresistible natural disasters caused by the failure.

(5) More than the warranty period of one-year instrument failure.

IV, the user should keep the card. The loss of no replacement, the card shall not be altered.

V. The warranty card stamped with the special seal of the factory warranty is valid when the instrument requires maintenance, with this card and Certificate of Inspection Maintenance.

VI. After-sales service telephone: 400-012-6866

VII. Address: #159 TanGangLu HaiAnZhen JiangSu China

After-sales service commitment

Dear Customer:

Thank you very much for choosing our products. Our company takes quality as our life, reputation as our development, and service as our development guideline.

Our Commitment

1. All the production processes of our company strictly implement the ISO9001 international quality standard system and fully comply with the enterprise standard.

2. 24/7 telephone line service, our company will provide the latest information and technical data to the majority of customers at any time.

3. Our company can send professional and technical personnel to provide free operation guidance and technical training for users who purchase the instruments.

4. My company promises: one year warranty and lifelong maintenance from the date of purchase of the instrument.

5. Provide long-term quality technical support to users, and supply relevant spare

parts to users at any time at a discount.

6. Timely tracking service, regular research market, listen to feedback and suggestions, and immediately improve the adjustment.

7. On-line acceptance, online interpretation of doubts, expert guidance.

After-sales Service Program

1. 24/7 technical service hotline (technical service phone number: 400-012-6866)

When the after-sales service personnel receives the fault and repair call, they will immediately arrange for the engineer to return the call and make a preliminary judgment of the fault. If no on-site solution is needed, it will be solved by telephone and other means in 4 hours.

If the on-site solution is needed, technical engineers can be contacted to rush to the site. Provincial capital cities will be solved within 24 hours, other cities within 48-72 hours.

In case of hardware failure, technical engineers can be arranged to rush to the site with spare parts to ensure that the problem will be solved for customers within 2 working days.

2. Email reply service (Email: postmaster@dscr.com.cn)

Provide users with technical support services based on email method, and the response time of user help email is 12 hours.

3. Website service (www.dscr.com.cn)

Provide product technical introduction to customers

4. Fax response service (0513-88931551)

To provide users with technical support services based on the fax method, users use the fax method for technical communication for help, and the response time is 4 hours.

5. Emergency on-site service

In the event of an emergency or other support methods can not be solved, we provide on-site service, to reach the customer site on time.

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