



T-506 Cable Fault Pinpointer  
User Manual  
Version 3.2

Kehui International Ltd  
206 Mill Studio Business Centre  
Crane Mead, Ware  
Hertfordshire, UK, SG12 9PY  
Phone: (44) 1920 444050  
Fax: (44) 1920 468686  
Website: <http://kehui.com>

## Legal Notices

The copyright of this material belongs to Kehui International Ltd. No company or individual may extract, copy or translate in any way without the written permission of the copyright owner. Copyright infringement will be investigated.

This product complies with the design requirements for environmental protection and personal safety.

This product is a professional instrument specially designed for power cable faults. Please do not use it for any other purpose. The company assumes no responsibility or loss if it is used for other purposes.

The safety regulations in this user manual should be strictly adhered to.

The storage, use and disposal of the product should be in accordance with the product manual, relevant contracts or relevant laws and regulations.

As part of Kehui's continual product development this product is subject to design or technical changes without prior notice. When product improvement or technical changes occur, you can check the information through Kehui International Ltd. website <http://www.kehui.com>.

**Disclaimer:** Every effort has been made to make this material complete, accurate, and up-to-date. In addition, changes are periodically added to the information herein; these changes will be incorporated into new editions of the publication. Kehui International Ltd reserves the right to make improvements and/or changes to the product(s) and/or the program(s) described in this document without notice, and shall not be responsible for any damages, including but not limited to consequential damages, caused by reliance on the material presented, including but not limited to typographical errors.

**NOTE:** Windows is a registered trademark of Microsoft.

### Revision history:

Data version	Revision date	Revision reason	Person
V2.1	2019.03	Major update to original	Gong Elvics
V2.2	2019.03.24	New format, major edit	DiaKib
V2.3	2019.04.01	New Pack List added and minor corrections.	EilKwo
V2.4	2019.12.12	Major edit (all sections) inc. new tablet PC	BilKib
V3.0	2019.12.20	Final edit and issue	DiaKib
V3.1	2020.01.07	Update new tablet pc and battery connection	BilKib
V3.2	2020.06.03	Minor rewording	BilKib

Document number: T506\_V3.2\_UM\_EN

## Foreword

Thank you for purchasing the T-506 Intelligent Cable Fault Pinpointing Device (hereinafter referred to as T-506)

The T-506 is a high-performance cable fault detection instrument. The soundproof cover with professional acoustic design can significantly reduce the influence of environmental noise, and improve the sensitivity of sound detection even in noisy environments.

Using signal real-time wireless transmission technology (Bluetooth), the tablet APP interface is convenient and easy to use on site. Its human body proximity sensing technology provides added protection for the user's hearing. Automatic cable fault location is facilitated using Kehui's proprietary acoustic and magnetic signal synchronous display and intelligent processing technology.

T-506 is a complementary product to Kehui's T-30X series High Voltage Surge Generator, T-90X series Power Cable Locator, T-1X00 series Cable Fault Test Van.

Kehui constantly improves its products, and the individual instruments provided may differ from the instructions in this manual without prior notice. We are always at your service if you have any queries or should you require further information.

## Manual Objective

This user manual is the basic commissioning and on-site operation guide for the company's T-506. Users of the T-506 should read the entire contents of this manual in advance. If necessary, please contact us at [info@kehui.com](mailto:info@kehui.com) for further guidance.

This manual is mainly written for the first-line staff engaged in power cable fault repair, and can provide reference for the work of electrical technical engineers.

## Manual Composition

This manual is mainly composed of two parts: the technical parameters of the product and the specific operation of the instrument.

## Manual Agreement

This manual follows the following conventions:

1. All titles are in bold type.
2. If the title is followed by the words 'conditions', it means that the content required under the heading is required under certain conditions.

**[Note]** means that the reader should pay attention to those matters highlighted.

**[Warning]** means that it is vital that the reader pays particular attention to that topic, otherwise it could cause serious errors or compromise safety.

## Table of Contents

1.	SAFETY INSTRUCTIONS .....	6
2.	PRODUCT OVERVIEW .....	7
2.1	Product features .....	7
2.2	Scope of application .....	7
2.3	Product nomenclature .....	8
2.4	Environmental conditions .....	8
2.5	Standard Configuration .....	8
2.6	Technical Data Sheet .....	9
2.7	Instrument Structure .....	10
3.	WORKING BACKGROUND, PRINCIPLE .....	10
3.1	Working background .....	10
3.2	Working principle .....	11
4.	INSTALLATION AND ADJUSTMENT .....	12
4.1	Battery Connection .....	12
4.2	Install Probe .....	13
4.3	Installation and adjustment of the handle .....	14
5.	PREPARATION BEFORE USE .....	16
5.1	Turning on the Tablet PC .....	16
5.2	Turning on the Detector .....	18
5.3	Bluetooth Connection .....	18
5.4	Launch APP .....	19
5.5	Operation Interface .....	20
5.6	Button and Area function introduction .....	21
6.	GETTING STARTED .....	25
6.1	Determine cable path .....	25
6.2	Looking for fault discharge .....	26
6.3	Closing in on the fault .....	27
6.4	Initiate remote assistance .....	30
6.5	Instrument shutdown .....	30
7.	TRANSPORTATION, STORAGE AND CHARGING .....	30
7.1	Transportation considerations .....	30
7.2	Storage conditions, storage period and precautions .....	30
8.	INSTRUMENT CHARGING .....	31
9.	UNPACKING AND INSPECTION .....	31
10.	MAINTENANCE AND TROUBLESHOOTING .....	31
10.1	Daily maintenance .....	31
10.2	Simple problem handling .....	32
11.	PACKING LIST – T-506 .....	33

# 1. Safety Instructions

**Safety Note:** This user manual is the basic commissioning and on-site operation guide for the T-506 Smart Cable Fault Pinpointer. All operators of the T-506 should read the contents of this manual in advance. The manufacturer of this product is not responsible for any loss caused by the operator's failure to comply with the operating procedures of this manual or for violation of the safe working procedures of the operator.

**Meaning of the manual symbols** Important instructions concerning personal safety, operating procedures, technical safety, etc., are marked with the following symbols:

Symbol	Meaning
	Indicates a potential hazard that could result in serious or fatal injury
	Indicates a potential hazard which, if not avoided, may result in minor personal injury or property damage.
	Indicates that it contains important information and useful guidance for using this product. Failure to heed this information may result in the test not functioning properly.
	Indicates that this is a useful guideline based on field practice.

**Use of accessories:** Please be sure to use Kehui's spare parts to ensure the safe and reliable use of this instrument. Using accessories made by other companies will make any warranty null and void.

**Repair and maintenance:** This instrument must be repaired and maintained by Kehui or an agent authorised by Kehui. If you have any questions concerning maintenance, cable fault detection, on-site test consultation, etc., please contact the company at [info@kehui.com](mailto:info@kehui.com).

## 2. Product Overview

### 2.1 Product features

The product has the following characteristics:

1. Vibration detector with sound enclosure for a quieter monitoring background.
2. Wireless data transmission, removing the need for a physical connection between the detector and the Operator interface (tablet), making the fault location is easier.
3. The Operator interface of the tablet mobile PC uses touch-screen operation, to enhance the user experience.
4. The sound and magnetic field signals are displayed synchronously, to ensure the accuracy of the fault location.
5. Using intelligent identification technology, cable fault position is automatically identified.
6. Human proximity sensing technology, automatically mutes the sound to protect hearing.
7. Four types of sound filtering modes can be set to improve the sound detection.
8. Convenient adjustable handle height.
9. Variety of probes to meet different ground detection requirements.

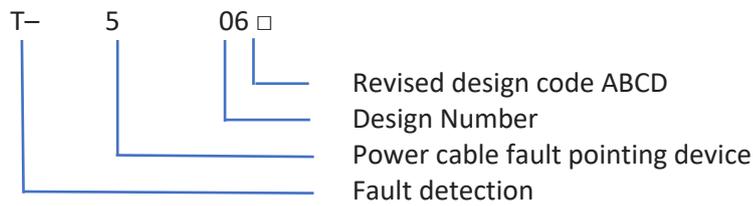
### 2.2 Scope of application

T-506 is an intelligent cable fault pinpointing device that integrates high-performance acoustic and magnetic signal detection sensors, a tablet mobile PC interactive interface, real-time wireless data transmission technology, portable design and artificial intelligence.

Using a DC high-voltage surge generator, magnetic field and sound signals are generated as the surge of energy through the cable causes the fault to break down. The waveforms relating to these signals are synchronously acquired and displayed. Through the use of intelligent algorithm processing the distance to the fault can be calculated.

## 2.3 Product nomenclature

Product model naming method:



## 2.4 Environmental conditions

1. Working environment temperature: -10 to 50°C
2. Working environment humidity: at 40°C 20% to 90% RH
3. Storage environment temperature: -20 to 50°C

## 2.5 Standard Configuration

1. One T-506 detector with a dedicated charger.
2. One T-506 tablet PC, including one charger adapter and one data cable.
3. One plate holder with shoulder strap and belt (combined with tablet PC assembly).
4. One T-506 handle (height adjustable).
5. One set of headphones.
6. One hard ground probe, 20mm long (suitable for smooth contact surfaces to ensure stable probe contact).
7. One grass probe, 75mm long (suitable for thicker soft ground, such as grass, beach, etc.).
8. A user manual.

Parameter	Parameter Value
Fault fixed point accuracy	≤0.2m
Detector dynamic range <ul style="list-style-type: none"> <li>• Sound channel</li> <li>• Magnetic field channel</li> </ul>	>110dB >110dB
Operating frequency range <ul style="list-style-type: none"> <li>• Sound channel</li> <li>• Magnetic field channel</li> </ul>	100Hz—1500Hz 160Hz—50000Hz
Sound channel filter <ul style="list-style-type: none"> <li>• No filtering</li> <li>• Low-pass filtering</li> <li>• Bandpass filtering</li> <li>• High-pass filtering</li> </ul>	100Hz—1500Hz 100Hz—400Hz 150Hz—600Hz 200Hz—1500Hz
Power supply <ul style="list-style-type: none"> <li>• Detector</li> <li>• Tablet PC</li> </ul>	Lithium battery 2200mAh Lithium polymer battery 2x 2600mAh
Charging <ul style="list-style-type: none"> <li>• Detector</li> <li>• Protection level</li>   <li>• Tablet PC</li> </ul>	Input: 100-240V - 50/60Hz Output: 8.4V/1.0A Class II  Input: 100-240V - 50/60Hz Output: 5.0V/2A
On-site continuous working hours <ul style="list-style-type: none"> <li>• Detector</li> </ul>	> 12h
Weight <ul style="list-style-type: none"> <li>• Detector</li> <li>• Tablet PC</li> </ul>	2.0kg (with handle) 1.2kg (including harness)
Volume <ul style="list-style-type: none"> <li>• Detector</li> </ul>	230mm x 160mm (diameter x height)
Waterproof and dustproof <ul style="list-style-type: none"> <li>• Detector</li> <li>• Tablet PC</li> </ul>	IP65 IP655



### 3. Working background, principle

#### 3.1 Working background

To locate cable faults, the T-506 needs to be used with a DC High Voltage Surge Generator. In the field, the discharge cycle and discharge voltage of the surge generator are adjusted as required, and a discharge signal is applied to the faulty cable. For cables of different voltage levels, the highest surge voltage allowable will vary. The maximum surge voltage level should be limited to that specified for the particular cable under test to avoid damage.

In addition to being able to work with the Kehui T-30X series DC high voltage surge generator and T-1X00 series cable test van, the T-506 can also operate with equipment from other manufacturers.



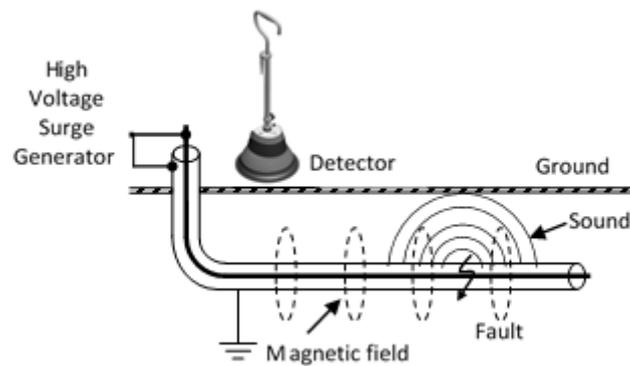
**[Warning]** When you use the DC high voltage surge generator, be sure to follow the appropriate safety procedures and strictly follow the requirements of the DC High Voltage Surge Generator User Manual.

## 3.2 Working principle

### 3.2.1 Acoustic magnetic synchronisation

A high-voltage impulse signal is applied to the faulty cable by the high voltage surge generator, and the current flows along the cable to induce a magnetic field. At the same time, the fault breakdown discharge generates a sound signal that propagates outward from the fault point. The T-506 detector on the surface is triggered by the magnetic field and synchronously measures the magnetic and acoustic signals.

Due to the difference in the propagation speed of the magnetic and acoustic signals, there is a time difference between the two signals reaching the Detector. The further the detector is from the fault, the greater the time difference and conversely the time difference reduced the closer the Detector is to the fault. When the Detector is directly above the fault, the time difference is at its smallest. Using this approach, the exact position of the fault can be found by repeatedly moving the Detector along the section of the cable route defined by the pre-locator. This method of finding the cable fault of the T-506 is called the acoustic-magnetic synchronisation method, and its principle is shown in the figure below.



### 3.2.2 Sound intelligent recognition technology

The T-506 is a smart cable fault detection instrument that utilises advanced artificial intelligence (AI) algorithms. The programme algorithm has been refined based on the data from a very large number of actual faults and has the ability to automatically identify fault discharge sounds. In the process of finding the fault point, when the T-506 intelligent algorithm recognises the fault discharge sound, it will give corresponding prompts on the APP interface, so that the user can find the cable fault point more easily.

### 3.2.3 Proximity sensing technology

The T-506 can sense a person's touch. When a human hand touches the metal part of the T-506 handle, the unit will automatically cut off the transmission of the sound signal to avoid the strong vibration caused by touching the instrument and stops its transmission to the headphones. When the user removes the hand from the handle, after a period of delay, the T-506 automatically resumes the transmission of the sound signal.

### 3.2.4 Filter mode setting technique

The T-506 uses a high-performance microprocessor and digital signal processor (DSP) to process the acquired sound and magnetic field signals in real time and perform continuous digital filtering operations.

During use, the user can select low pass, band pass, high pass or all pass filter modes according to the test environment and conditions, in order to get better discharge sound detection effect. The appropriate filtering mode will filter out noise or interference outside the passband while receiving the cable fault discharge sound. This improves the signal-to-noise ratio of the fault discharge sound.

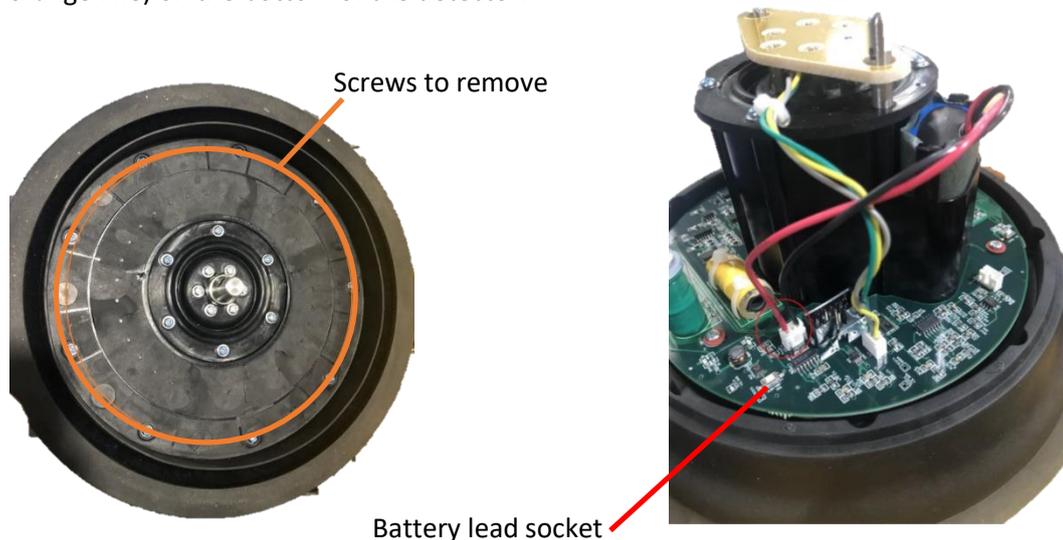
The T-506 can sense a person's touch. When a human hand touches the metal part of the T-506 handle, the unit will automatically cut off the transmission of the sound signal to avoid the strong vibration caused by touching the instrument and stops its transmission to the headphones. When the user removes the hand from the handle, after a period of delay, the T-506 automatically resumes the transmission of the sound signal.

## 4. Installation and adjustment

### 4.1 Battery Connection

Due to airline regulations, the unit is often shipped with the battery disconnected. When the unit is first unpacked, plug the charger into a suitable power outlet and insert it in to the charger socket on the detector (section 2.7). Press the on/off button. If the unit's Power light does not illuminate, it is probable that the battery is disconnected.

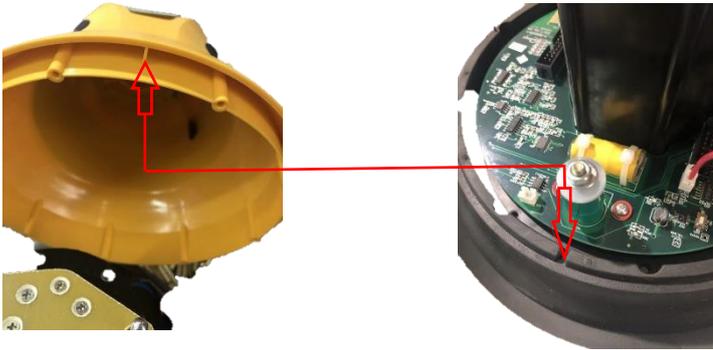
Remove the handle and turn the Detector over. Look at the underside of the Detector as below and, using a cross-head screwdriver, remove the 9 screws (position shown by the orange line) on the bottom of the detector.



Note these screws are quite small, it is recommended that they are kept in a suitable container to ensure they are not lost.

Lift up the yellow cover of the detector and plug the battery cable in to the socket marked in the photograph above (right). If the cover is difficult to lift, try to rotate it a little.

Replace the cover on to the bottom part, ensuring that the top and bottom parts are aligned, as marked with arrows in the photos.



Finally, replace the screws and charge the battery. The unit should then be operational.

#### 4.2 Install Probe

Unpack and remove the T-506 detector and connect the probe as shown below. Depending on the nature of the ground environment (hard or soft), choose the appropriate probe.



① Detector

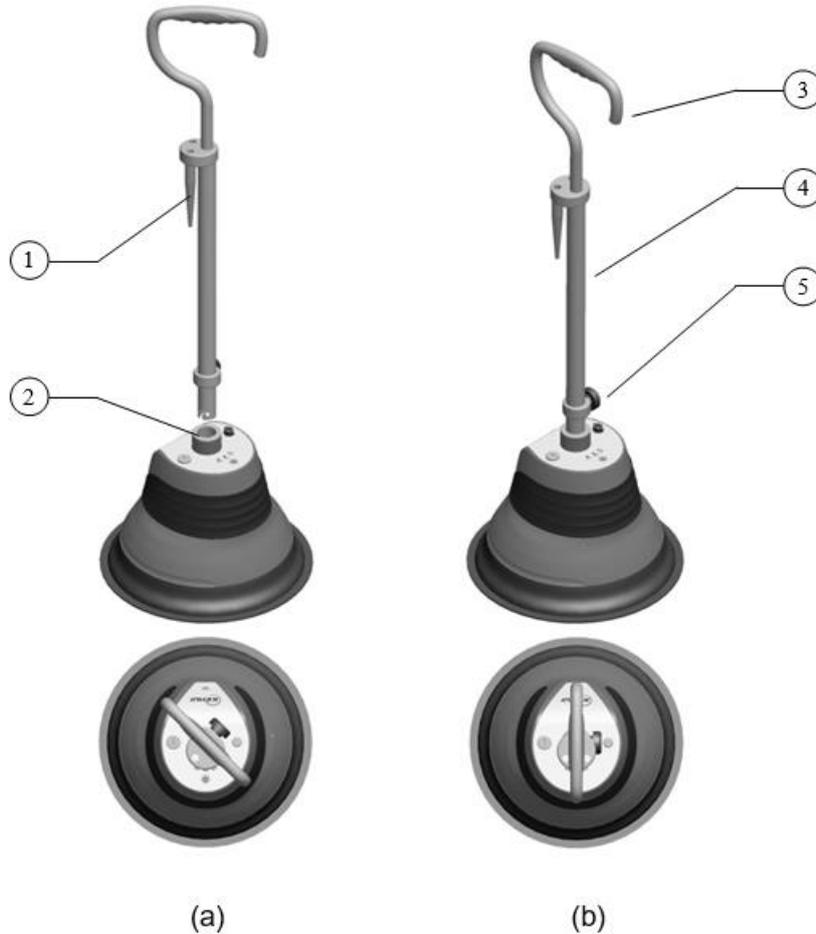
② Hard ground probe

③ Soft ground probe

### 4.3

#### Installation and adjustment of the handle

Unpack and remove the T-506 handle and connect it to the main unit as shown below. First, align the lower end of the handle with the upper lever connector of the main unit as shown in Figure (a) (note the alignment of the lower opening of the handle and the connecting rod in the lever base). Then, insert the handle firmly into the connector as shown in Figure (b). Finally, rotate it 45 degrees clockwise to complete the assembly.



- 1) Probe   2) Handle connector   3) Handle top   4) Handle shaft   5) Locking Knob

After the handle shaft and the main assembly are completed, adjust the height of the handle bar according to the height and usage habits of the staff - turn the locking knob counterclockwise, loosen the fastening connection of the handle bar and the handle tube, and then adjust the handle. The height of the rod is at a suitable position, and finally the knob is rotated clockwise to fix the handle bar and the handle tube.

### 4.3.1 Tablet preparation



Fully charge the tablet using the charger supplied (do not use any other charger for this purpose).

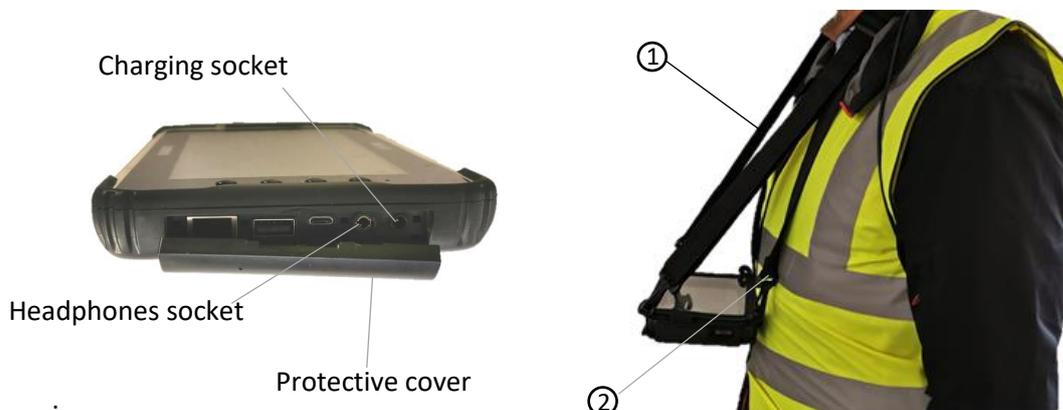
For ease of use the tablet PC can be used with the supplied harness, neck strap and belt which can be adjusted to suit the user. The initial use of the T-506 requires the assembly of the tablet and tablet stand. The tablet should be inserted into the harness as shown below.



① Neck Strap 1 ② Neck Strap 2 ③ Headphones ④ Headphones Plug ⑤ Tablet Cover

For hands-free ease of use, the tablet can be supported in front of the body (see below).

1. Neck Strap 1 should be clipped to the top two rings on the tablet cover and hung around the neck with its length adjusted, so that the tablet PC hangs at a comfortable height.
2. Neck Strap 2 should be clipped to the bottom two rings the tablet PC, enabling it to be viewed when looking down. The strap should be tightened to achieve the correct viewing angle.
3. The headphones to hear the acoustic signal from the detector.
4. The headphones plug is inserted in to the socket on the right-hand side of the tablet, having first opened the protective cover.
5. The tablet cover can be fastened across the screen to protect it when not in use.



## 5. Preparation before use

The following steps should be taken to begin using the T-506 detector and the tablet APP.

### 5.1 Turning on the Tablet PC

- Turn on the unit by pressing the “on” button for several seconds (below (i)).

i)



- This should result in the screen shown in (ii). Do not touch the screen until advised below.

ii)



- This screen will remain for about 30s while the unit boots-up. It will then automatically change to (iii) with the “Handheld” logo swiping across the screen. After a few seconds it will stabilise and then change to the screen shown in (iv)

iii)





- When this screen appears, put your finger at the bottom of the screen and swipe upwards, the screen should change to (v)

v)



- Put in the PIN number (initially 1234) using the touch screen and press ✓ , the screen changes to (vi), with the Kehui 506 APP highlighted.

vi)



- Touch the Kehui symbol and the APP will open (vii). If the Kehui symbol is not there, swipe the screen left or right, as it may be on a different page.

vii)



## 5.2 Turning on the Detector

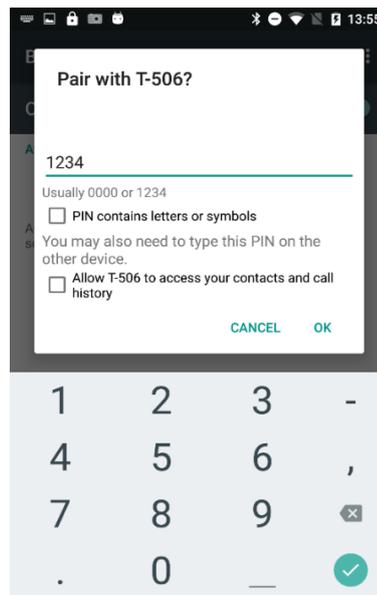
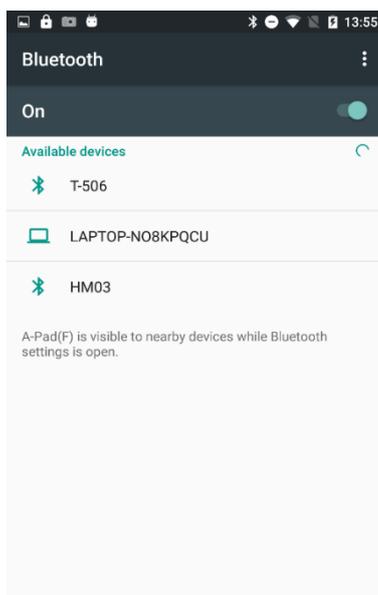


The detector power can be turned on or off by pressing the power  on/off button on the detector. The detector power indicator lights up when the detector is turned on.

**[Warning]** The battery must be charged using the dedicated charger. Using other chargers that do not meet the exact parameters, may cause damage to the instrument.

## 5.3 Bluetooth Connection

With the detector and tablet PC powered on, click the device name T-506 in the pop-up pairing dialogue box, enter the T-506 detector default PIN code 1234, then click OK to complete the Bluetooth pairing and connection of the tablet and detector. Once the Bluetooth connection is successful, you should exit to the tablet desktop interface. The operation interface is as follows:



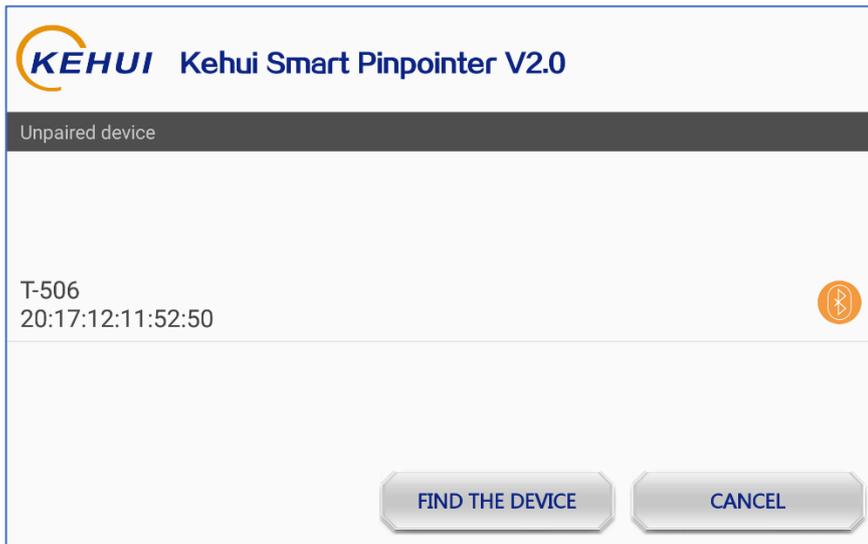
**[Note]** This step only needs to be performed once. After the device is successfully paired, it is not necessary to repeat this operation. However, the pin number will be required to access the tablet after a period of inactivity.

## 5.4 Launch APP

After clicking the T-506 APP icon  on the desktop, the user will see the APP start-up screen as shown in the figure below.



Click the 'Start' button to enter the device selection interface and select the paired T-506 device. The operation interface is as follows;



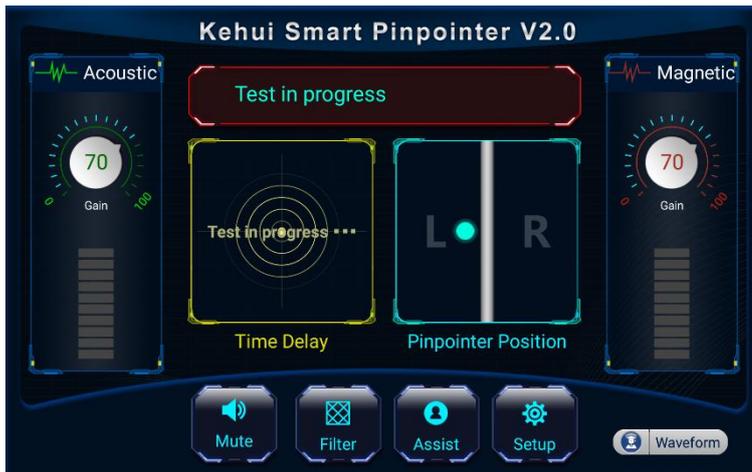
**[Note]** The device selection interface will only pop up when the app is running for the first time. After the first use it will directly enter the operation interface of the APP.

## 5.5 Operation Interface

In order to meet the different needs of users during field tests, two different operating interfaces are available in the APP - 'operator mode' and 'waveform mode'.

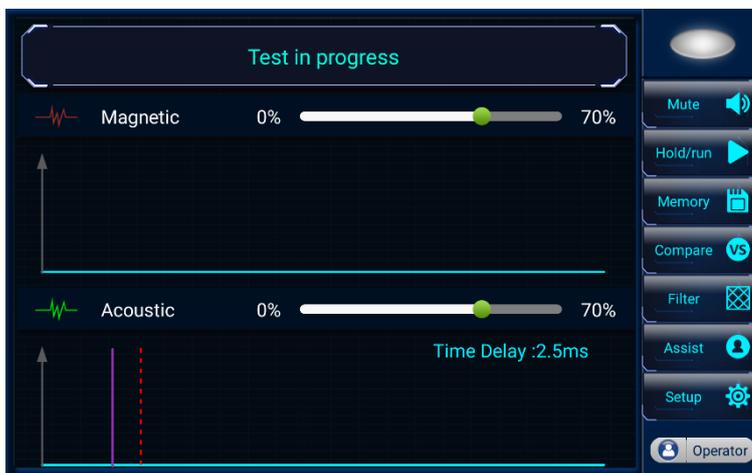
### 5.5.1 Operator Mode

In this mode you can observe the test results more intuitively.



### 5.5.2 Waveform Mode

In this mode you can analyse the magnetic field and acoustic waveform characteristics in real time



**[Note 1]** After entering the operation interface, the Bluetooth indicator of the detector shines bright blue, which means that there is communication between the tablet PC and the detector.

**[Note 2]** The default operation interface of the APP is 'Waveform' mode. To switch to the 'Operator' mode, click the mode switch button in the lower right-hand corner.

5.6 Button and Area function introduction

5.6.1 Operator Mode (1) Button function

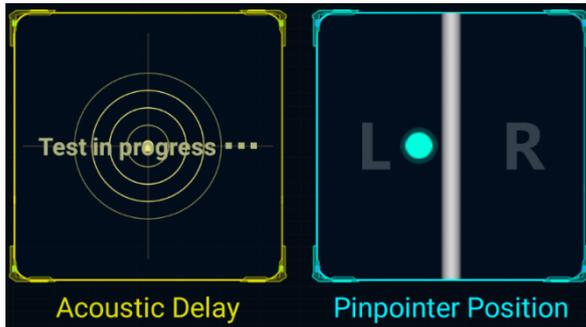
Button	Function
	Mute or unmute the APP sound
	Select the filter mode of the sound channel. The submenu functions are as follows:  'Low pass' band set to 100Hz - 400Hz 'Bandpass' band is set to 150Hz-600Hz 'High Pass' band is set to 200Hz - 1500Hz 'All-pass' band is set to 100Hz-1500Hz (Power on defaults to 'All-pass' state) 'Confirm' Set the selected filter mode 'Cancel' Exit Filter Settings submenu
	Remote assistance interface.
	Access to language, software upgrades, menu bar and about us.
	Switch to Waveform mode

5.6.1.1 Information



This message will appear to provide confirmation of the current test status and the identification of the fault-discharge acoustic signal by the T-506 intelligent algorithm (e.g., magnetic field trigger, fault found).

### 5.6.1.2 Test result display area

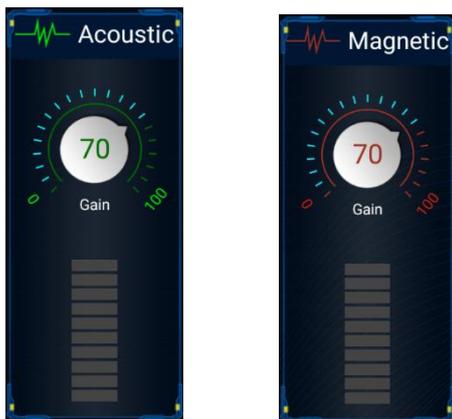


The left side records the delay of the fault sound compared to the magnetic signal as identified by the T-506 intelligent algorithm; the right side shows the position of the T-506 detector probe relative to the cable path.



**[Note]** The dot represents the detector, the straight line represents the test cable path, the dot in the “L” area represents the detector to the left of the cable path, and the “R” area represents the detector to the right of the cable path.

### 5.6.1.3 Sound and magnetic field information display area



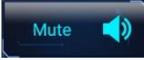
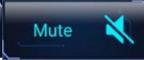
The gain adjustment knob and gain value display are shown. The electronic knob can be rotated to adjust the signal gain which can be set from a minimum of 0, to a maximum of 100%, the default value is 70%.

The progress bar in the lower half indicates whether the T-506 is synchronising the acquisition of sound and magnetic field signals, as well as the amplitude changes of the acquired signals.



**[Note]** When the T-506 is triggered by the magnetic field signal, the progress bar will jump from low to high, and its highest value represents the maximum value of the amplitude of the sound or magnetic field signal at the time of the trigger.

## 5.6.2 Expert Mode (1) Key function

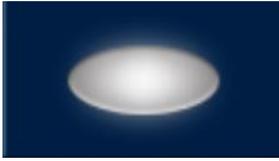
Button	Function
 	Mute or unmute the APP sound.
	Pause or resume the automatic update of the sound and magnetic field signal waveforms.
	Store the current sound signal waveform.
	Compare the stored sound signal waveform with the currently displayed waveform (Clicking this button again cancels the comparison function).
	Select the filter mode of the sound channel. The submenu functions are as follows:  'Low pass' band set to 100Hz - 400Hz 'Bandpass' band is set to 150Hz-600Hz 'High Pass' band is set to 200Hz - 1500Hz 'All-pass' band is set to 100Hz-1500Hz (The default when the unit is powered on is 'All-pass' state). Clicking 'Confirm' will set the selected filter mode and 'Cancel' will exit the Filter Settings submenu
	This button will bring up the remote assistance interface to initiate remote help.
	Menu allowing language selection, software upgrades, menu bar and About Us.
	Switch to Operator mode

### 5.6.2.1 Information



This message will appear to provide confirmation of current test status and the identification of the fault-discharge acoustic signal by the T-506 intelligent algorithm (e.g., magnetic field trigger, fault found).

### 5.6.2.2 Sync. Indicator

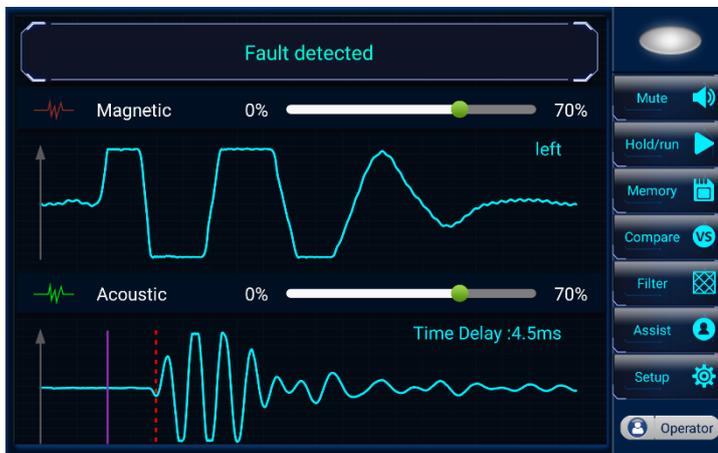


Indicates whether the T-506 is acquiring sound and magnetic field signals synchronously.



**[Note]** When the T-506 is triggered by the magnetic field signal, the sync indicator is red and continuously lit for 0.5s. After this it greys out until the next trigger. When the T-506 is not triggered by the magnetic field signal, the sync indicator is greyed out.

### 5.6.2.3 Magnetic field and sound information display area



The gain adjustment slider and the gain value display can be adjusted by clicking and moving the slider from 0 to 100%, at power-on the default is 70%).

The waveform displays show the magnetic field and sound data waveforms collected by the T-506; there is a fixed purple cursor and a movable red cursor in the sound display area, and the purple real cursor position represents the start of the magnetic field trigger time.

#### i) Magnetic field waveform display part

In the upper right there is the character "Left" or "Right" indicating the position of the T-506 detector relative to the cable path.



**[Note]** "Left" means the detector is to the left of the cable path, and "Right" means it is to the right of the cable path.

#### ii) Sound waveform display section

In the upper right the time delay between the acoustic and magnetic signal is shown in milliseconds (ms).

There is a movable red cursor in the display area, its position can be arbitrarily selected by tapping the screen with a finger, the corresponding acoustic magnetic delay value is given in the upper right corner.



**[Note]** The acoustic magnetic delay value represents the time difference between the sampling time of the sound signal at the position of the red cursor and the triggering time of the magnetic field signal.

## 6. Getting Started

### 6.1 Determine cable path

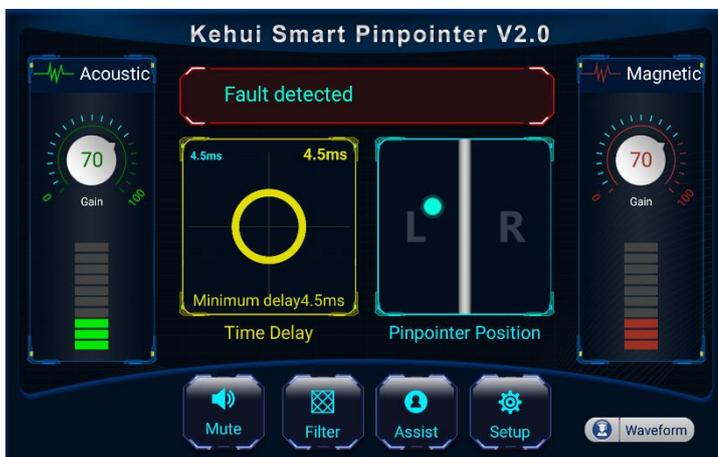
In order to operate the T-506, a compatible DC high voltage surge generator is required. Its output is connected between an open end of the faulted core of the cable and the earth/ground of the cable under test, surge generator is adjusted so that its output discharge breaks down the fault in the cable. This is repeated periodically and the process below is followed to find the point of failure.

To find a cable fault, first determine the path of the cable. In most cases, the cable path can be found from drawings and. In addition, if the cable is laid in the trench or tunnel, its path can be observed directly on site. In some cases, for example where the drawings are incomplete, the path of the cable may not be accurately known. In these cases, an appropriate instrument will be required to trace the route of the cable.

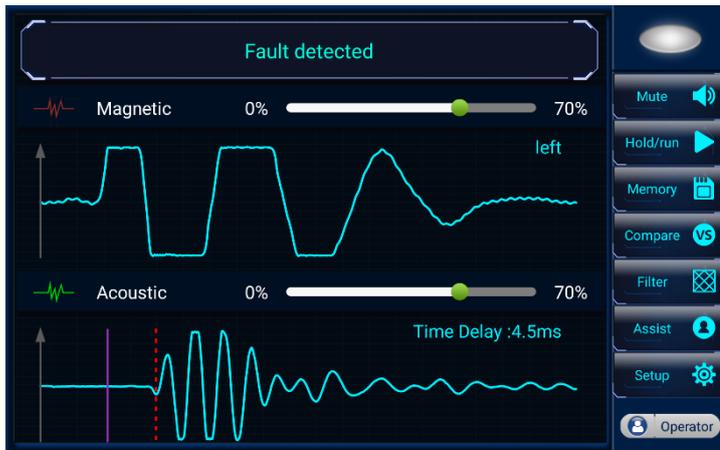
Once the cable path is determined, it is prudent to regularly reconfirm its position using the T-506. The steps are as follows:

- i) Place the T-506 detector on the ground above the test cable (keeping the green arrow on the housing pointing in the direction of the cable path) while the user is holding the tablet PC and facing in the direction of the green arrow on the detector.
- ii) Adjust the magnetic field gain to a suitable value, wait for the T-506 magnetic field signal to trigger and read the detector position information.

### Operator interface



## Waveform interface



- iii) According to the position information obtained, move the detector close to the cable path, wait for the magnetic field signal to trigger and then read the detector position information. Repeat until this changes.

## Operator interface



If the dot appears to the left of the line move right or the opposite if the dot appears on the right.

## Waveform interface

The label character at the top right of the waveform display area changes from "Left" to "Right" (or vice versa).

- iv) Move the detector in a zig-zag route above the test cable. The indications in step iii) will change alternately. It can then be confirmed that the cable path lies between the left and right placement positions of the detector.

**[Note]** When the T-506 is triggered by a magnetic field, the trigger light (red) of the main unit will flash at the same time. The blinking period is the time interval between the discharges from the DC high voltage surge generator.

## 6.2 Looking for fault discharge

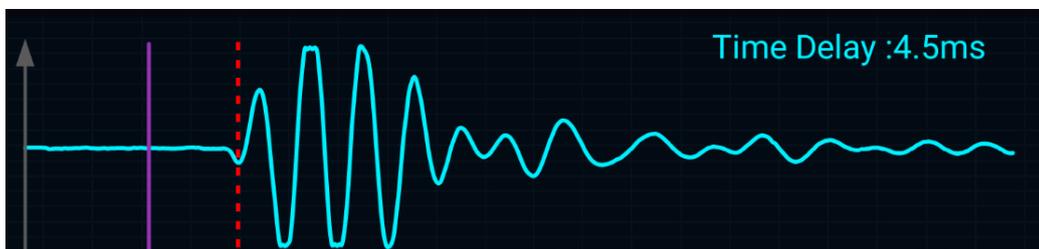
After determining the cable path, we then need to determine the location of the cable fault point within the range identified by the pre-location.

To find the fault point, take readings from the tablet step by step along the cable path within the specified range. The distance of each reading should not exceed 0.5m, and should be shortened to 0.2m as required. This may take some time, so patience and meticulousness are necessary.

During testing in the Waveform mode, it is necessary to note the sound signal at the moment when the magnetic field signal is triggered. At the same time, check the information frame of the APP operation interface or observe the characteristics of the sound signal waveform to judge whether the fault point has been detected.



**[Note]** The cable fault discharge usually produces a short, low-pitched sound. In the Waveform interface you can observe its waveform characteristics - a curve that oscillates repeatedly above and below the baseline, with a large amplitude in the middle segment and a small amplitude at the beginning and end segments. An example is as follows:



**[Note]** When searching for the fault point, the sound gain of the APP must be set to an appropriate level by adjusting the volume control button of the tablet. Excessive volume in the headphones may be uncomfortable.

**[Note]** Appropriate sound gain helps to improve the efficiency of the T-506 unit's ability to intelligently identify the sound of faults. As a basic principle, in the Waveform interface, the maximum amplitude of the sound waveform should be at least two-thirds of the total height such that distortion at the top of the waveform does not occur; in the user interface, the maximum height of the sound progress bar should be at least three points and should not be full scale.

### 6.3 Closing in on the fault

In the process of finding the fault point, we generally have to test and observe the results multiple times to find the fault point, in the same location.

When the message box of the APP repeatedly prompts "Fault found"; or the fault discharge sound waveform is observed on the Waveform interface, it means that the fault discharge sound has been identified, and you are in the proximity of the fault point.

Move the detector along a small distance along the cable path and observe changes in the operating interface:

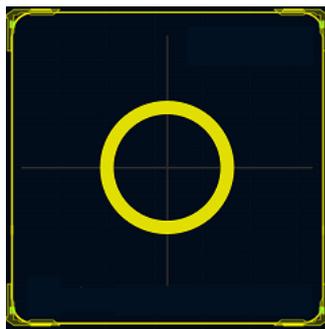
### Operator interface

- i) In the User mode, if after multiple readings in the same position, the test results show that a water ripple effect (below), it indicates that no fault point has been found, and it is necessary to continue moving the detector.



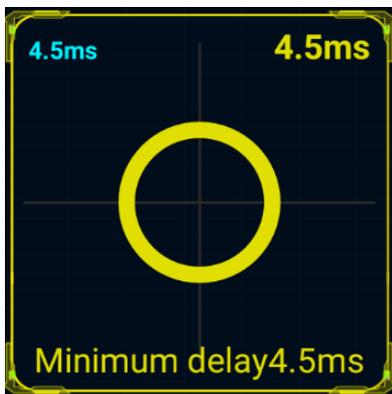
No fault status found

- ii) If, after multiple readings in the same position, the test result display changes to a solid ring, it indicates a suspected fault sound has been identified.



Fault identified

- iii) Continue to take measurements at the same position, the ring starts to flash, and the acoustic magnetic delay value at the current position is given in the upper right corner. The position of the detector is determined to have identified a fault discharge sound, and the fault point has been found.



Fault identified status 2



[Note] During the test, the APP also records the acoustic and magnetic delay value of the instrument at the last trigger, which is shown in the upper left and it records the minimum delay value identified at the bottom. This information helps to show whether you are approaching the fault point.

- iv) Move the detector a short distance. Repeat steps i)-iii) to compare the acoustic and magnetic delay values of the current positions as shown in the upper right with the minimum delay between the acoustic and magnetic signals value shown at the bottom. When this is at a minimum, the position is directly above the fault point.

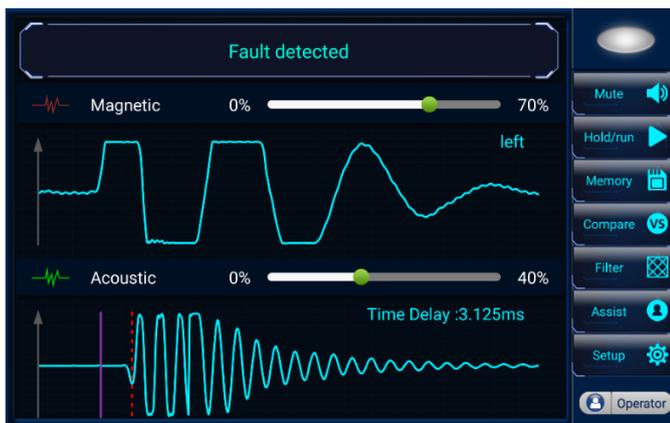
**[Note]** Pay attention to the volume indicated by the acoustic bar during the process to ensure that it is maintained at a reasonable level. This will help the APP to give the results of intelligent recognition more quickly and accurately.

### Waveform interface

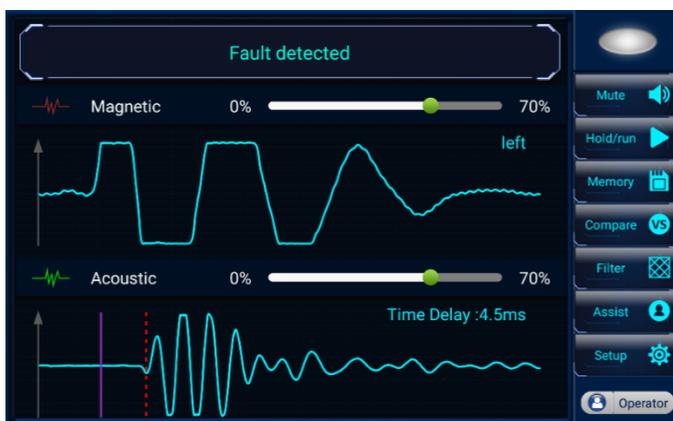
After several tests at different positions, observe the amplitude of the cable fault discharge waveform and the change of the acoustic, magnetic delay value: if this delay value becomes smaller, and the amplitude of the discharge sound waveform increases, it indicates you are getting closer to the fault point. Conversely reducing acoustic amplitude and increasing delay time means you are getting further away from the fault.

Move the detector until you find the position where the acoustic, magnetic delay value is the smallest, this will be directly above the cable fault point.

Waveform interface example:



a) The fault is close to the operator

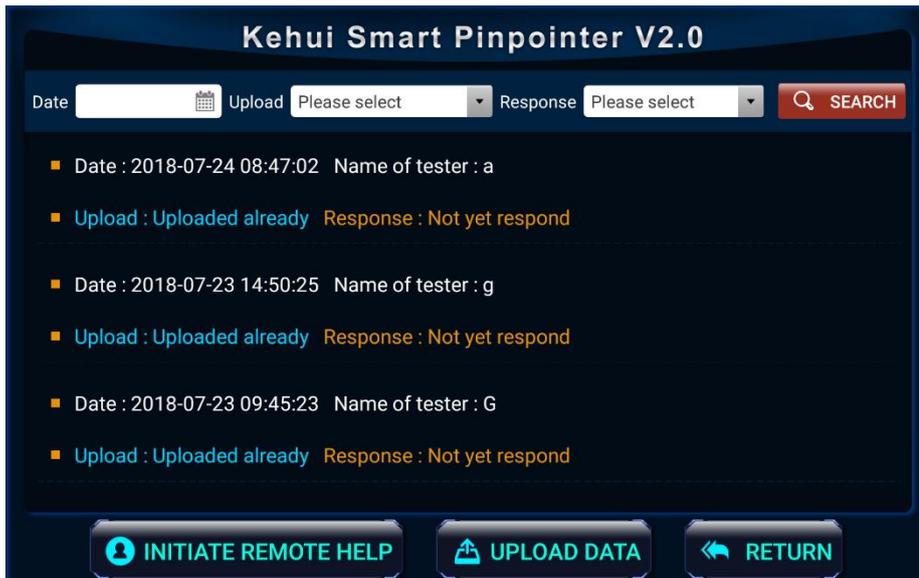


b) The fault is further away

## 6.4 Initiate remote assistance

In the event of problems, the user should contact Kehui ([info@kehui.com](mailto:info@kehui.com)) to provide details of any error or query. If necessary, the remote assistance function of the APP can be used to upload data from the Pinpointer to assist with the interrogation of data. This facility is only available when there is a mobile phone network or the tablet is connected to WIFI.

Click the “Assist” button to enter the launch assistance interface, and the app will upload about 30 seconds of test data to the server. This can then be assessed by our test experts.



## 6.5 Instrument shutdown

After use, press the power on/off button of the detector to turn off the power; press and hold the power button of the tablet phone to completely turn off instead of letting the tablet remain on standby (to avoid it running out of power during a long period of standby).



**[Note]** After the detector is powered on, it will automatically shut down after about 6 minutes if a Bluetooth connection with the tablet is not established.

## 7. Transportation, Storage and Charging

### 7.1 Transportation considerations

Use transport boxes provided and observe the environmental conditions specified in the technical data sheet.

### 7.2 Storage conditions, storage period and precautions

Observe the environmental conditions specified in the technical data sheet when storing the instrument.

The instrument should be stored in a dry environment providing suitable protection against mechanical damage and dust.

Where the instrument is not used on a regular basis, it should be stored indoors using the original packaging, and should not be exposed to the sun or rain. The room should be air-conditioned and should not contain corrosive gas. The instrument should not be subjected to severe mechanical vibration or shock and there not be a strong electromagnetic field.

If the instrument is not used for a long time, make sure that the detector and tablet are turned off and fully charge them every 10 months.

## 8. Instrument charging

Always use the dedicated charger with the detector. Insert the charger plug into a 220V/50Hz AC (or 110V/60Hz) power socket, and insert the output plug into the T-506 detector charging socket. The detector takes 3 hours from being completely discharged to full charge. This process is automated and requires no intervention.

Use the tablet charger provided and always use its charger when re-charging.

## 9. Unpacking and inspection

Before unpacking for the first time, follow the steps below.

- i) Take out the document bag containing the instructions and packing list.
- ii) Check the packing list to ensure that the contents are complete and intact.
- iii) Check that the serial number is consistent with the instrument and the factory number of the warranty card.
- iv) Check the power-on to make sure the detector and tablet are functioning properly.

## 10. Maintenance and troubleshooting

### 10.1 Daily maintenance

As long as it is used properly, the instrument does not have any parts that require maintenance or calibration under normal conditions. If the surface of the instrument (including probe, handles, tablets, tablet holders, and headphones) is contaminated with dirt, wipe it off with a soft, dry cloth or a soft cloth slightly dampened with a soft (non-bleach) household cleaner.

As a basic principle, do not let moisture into the detector charging port or the tablet; if the surface of the detector unit or tablet becomes wet, dry it with a soft cloth.

Take care not to insert the power -plug in to the tablet headset socket or data cable interface and do not pull the headset cable too hard.

As a basic principle, mainframes, tablet PCs, headsets and other accessories should avoid strong vibrations and shocks.

Before seeking a repair service, first check the following items to see if you can solve the problem you are experiencing.

<b>Problem</b>	<b>How to resolve</b>
The power light on the T-506 does not come on when the power button is pressed.	Check that the detector battery is charged and if not, recharge it with the dedicated charger.
Tablet does not start when the power button is pressed.	Check that the tablet is charged and if not, charge it with the dedicated charger.
APP interface sound and magnetic signal display is not automatically updated	Check and confirm the following items in order: <ol style="list-style-type: none"> <li>1. Make sure the detector Bluetooth status indicator is on (steady state) and the detector and tablet are in Bluetooth connection.</li> <li>2. Verify that the APP field gain is not set at a lower level.</li> <li>3. Confirm that the APP Pause button is not pressed.</li> </ol>
Monitor headphones without sound	Check and confirm the following items in order: <ol style="list-style-type: none"> <li>1. Make sure the detector Bluetooth status indicator is on (steady state) and the detector and tablet are in Bluetooth connection.</li> <li>2. Verify that the monitor is connected to the tablet and that the tablet is not muted or the volume is too low.</li> <li>3. Confirm that the APP mute button is not pressed.</li> </ol>
APP doesn't start	Check and confirm the following items in order: <ol style="list-style-type: none"> <li>1. Make sure the detector is turned on.</li> <li>2. Confirm that the tablet Bluetooth is turned on.</li> <li>3. Make sure the tablet Bluetooth has searched for the detector device and the device is paired.</li> <li>4. Exit and restart the app.</li> </ol>

## 11. Packing list – T-506

Item	Description	Photo	Quantity
1	T-506 Detector		1
2	Detector handle		1
3	Tablet		1
4	Charger for the Detector		1
5	Charger for the Table		1
6	Headphone		1
7	Cables for the Tablet		1
8	Case and harness straps for Tablet		1
9	Adaptors for Tablet		1
10	User Manual		1

Kehui International Ltd is a company registered in England and Wales with Company Number 10283200