Operation Manual for KT-L Series Pipe Water Leak Detector

Contents

■ Caution

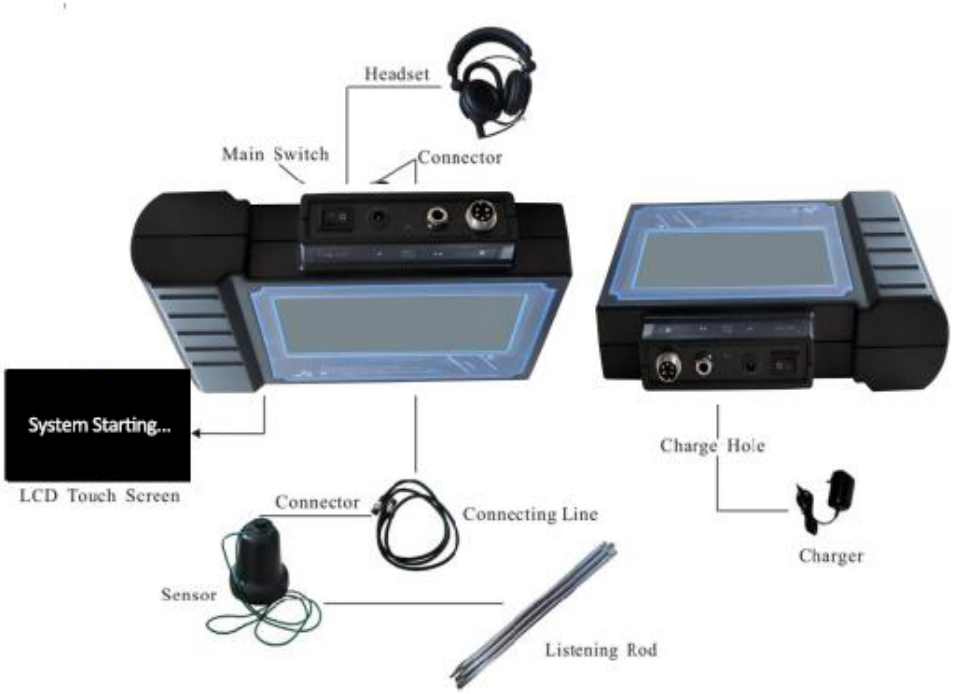
1. The instrument early in the design has been fully taken into account the use of the extreme environments . But still have to pay attention to the correct method of operation, please do not fall equipment deliberately, proper use will extend the life of the instrument .
2. The instrument is not waterproof, please do not immerse the instrument in water or operate in the rain.
3. Please do not strike LCD screen, do not expose the monitor for a long time in direct sunlight, if there is a touch faulty, please shutdown and restart.
4. To ensure the high sensitivity of the sensor, please gently, do not beat;
5. After using, please clean the instrument and load it into special box, please place the parts into the corresponding position, do not crush the screen.
6. The instrument should be placed in a cool and dry space.
7. Please do not disassemble the instrument, otherwise it will cause the sensor failure and system crashes.

■ Technical Parameters

Model No.	Depth	Frequency Range	Audio amplifier gain	Operation Mode	LCD	Record	Stand-by Time	PS
KT-200L	2 meters	1-5000HZ	Adjustable within the class of 100	Spectral Analysis Filter Analysis Fine Mode Point Measurement	7-inch HD Digital Color LCD Touch Screen	8 Sections totaling eight minutes of recording, not lost after shut down	8 Hours	12V 3600mAh Rechargeable Battery
KT-300L	3 meters	1-6000HZ						
KT-400L	4 meters	1-7000HZ						
KT-500L	5 meters	1-8000HZ						

■ Instrument Structure and Name

- KT-200L



■ Introduction and how to use

- Function Overview

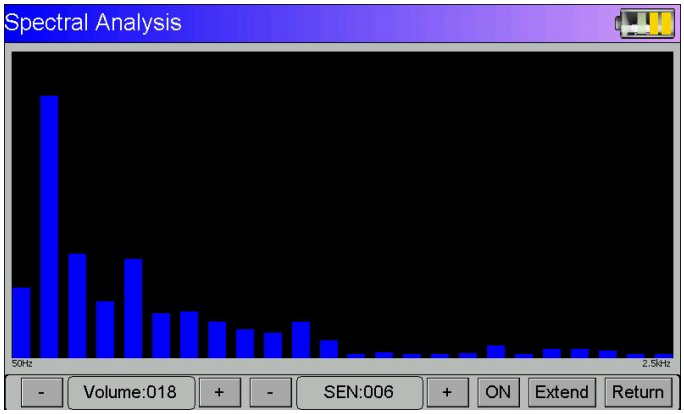
KT-200L, 300L ,400L, 500L, series type pipeline leak detector, is high performance leak detection equipment, has powerful anti-jamming and data processing capabilities, you can make your work easier. It has the following main features.

1. The use of latest digital signal processing chip and a digital filter chip, 16M cache controller integrated, more responsive. In particular, it can filter with the interference of environmental noise, screening out the leakage noise, allowing the operator to lock leakage points quickly.
2. 7-inch high-definition digital color LCD touch screen with a resolution of 800 * 480, provide 8 display pages, can show the measurement parameters more clearly and intuitively, and full touch screen design, simple operation.
3. Each has 1 ~ 5000Hz, 1 ~ 6000Hz, 1 ~ 7000Hz, 1 ~ 8000Hz, frequency range (spectrum analysis) , can be displayed the distribution of the noise signal at each frequency in real time.
4. Automatic drawing continuous noise curve (point of measurement) within a certain time, so that the leakage point position is determined more quickly.
5. Sensor is built-in preamp circuit, using a rubber ring seal and cushion, and the application of professional acoustic methods, making the ability to capture the noise is higher than similar products.

6. Adopt latest noise detecting element, sounds clear.
7. Save 8 sections totaling eight minutes of recording, which is not lost after shut down, could be analyzed at any time.
8. Using a large capacity battery, can work for more than ten hours , and can be removed charging and online charging.
9. Super anti-jamming circuit design, digital signal and analog signal effectively isolate and eliminate the noise generated by the digital circuit.

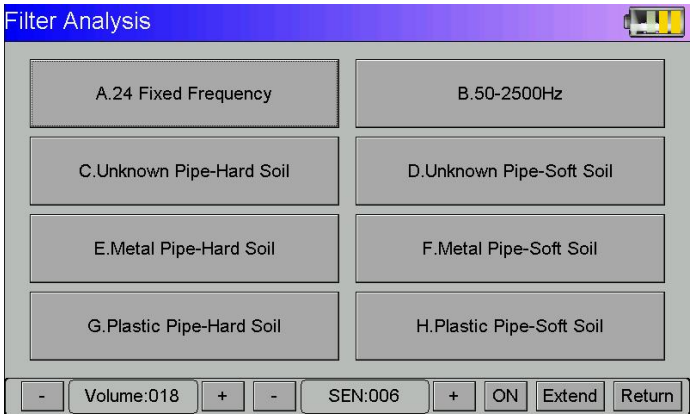
- Function Introduction

■ Spectral Analysis



It can display the corresponding instantaneous noise signal in corresponding frequency range.

■ Filter Analysis

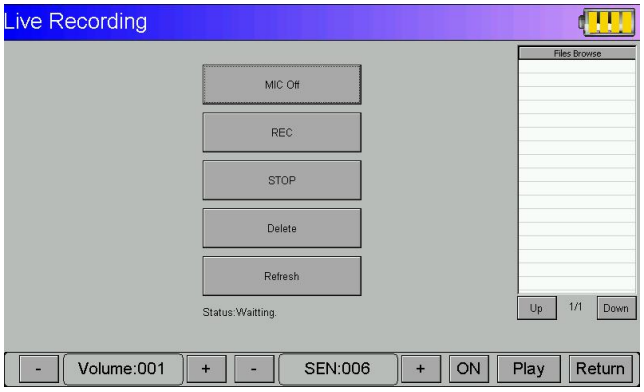


Choose to display corresponding transient noise signal within a frequency range.

Model No.	**Frequency Range**
KT-200L	1-5000HZ
KT-300L	1-6000HZ
KT-400L	1-7000HZ
KT-500L	1-8000HZ

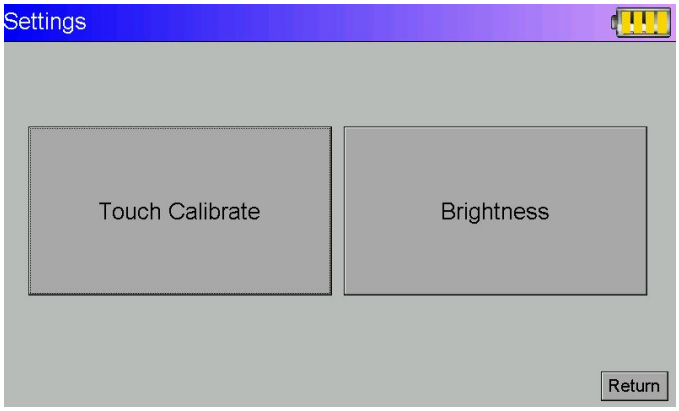
NOTE: Above is the corresponding frequency range table to each model No.

■ Live Recording



Save 8 sections totaling eight minutes of recording of noise, and open microphone to record current noise location, it's convenient to analysis specific location later.

■ Settings



Brightness adjustment and calibration of the touch screen(To adjust brightness large to observe easyly in bright light, turn down brightness in point measurement mode or without viewing screen to reduce power consumption, extend the single-use time)

■ How to use

Assembly, before starting work, need to assemble the various components according to the following requirements to ensure work properly.

(1) Plug five core cable into the host sensor interface and screw locking

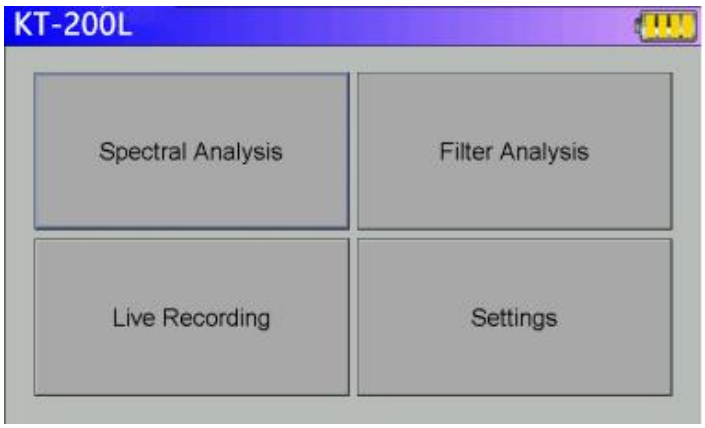
(2) Plug four-core cable into the interface of sensor and mounting screws ;

(3) Headphone into the headphone jack and make sure the connection is correct .

2. Operation

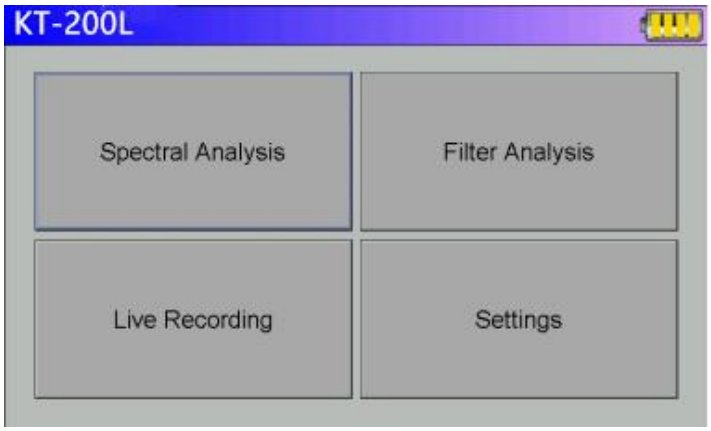
■ After switch into the boot interface

■ System enters standby screen after a successful start

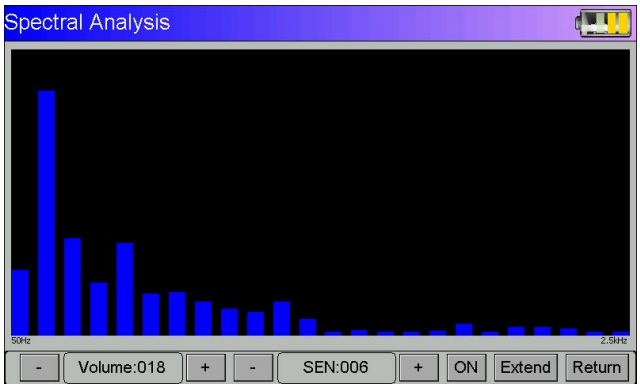


In the standby interface, you can see electricity usage and four function menu, click one to select it, double-click direct access.

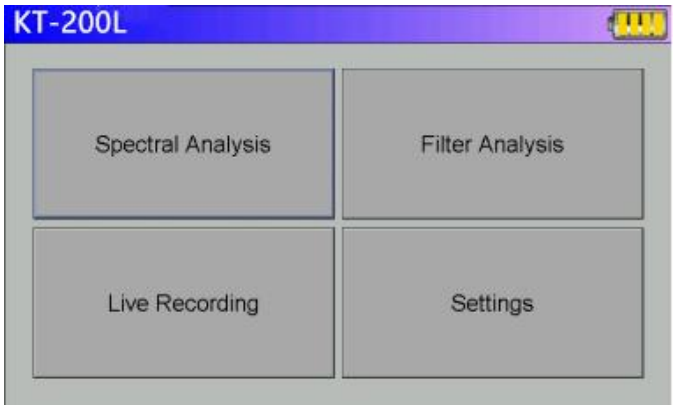
■ Select " Spectral Analysis "



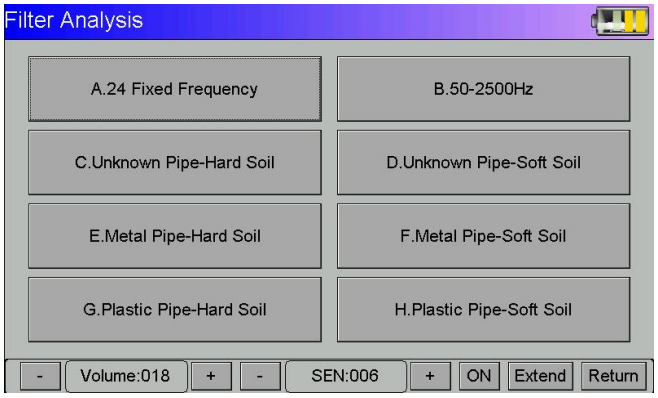
- Enter the "Spectral Analysis "



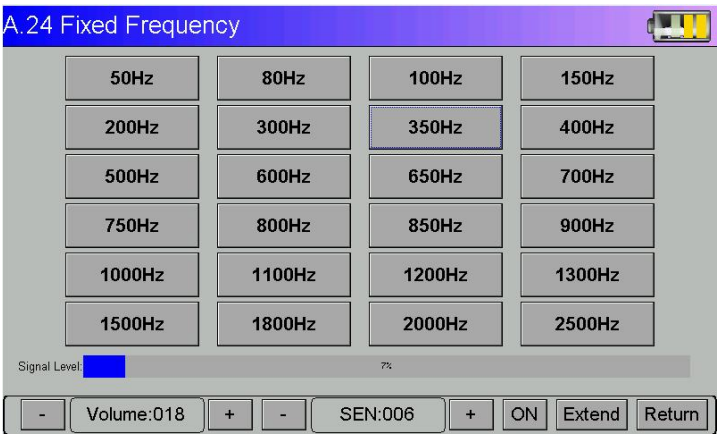
- Select " Filter Analysis "



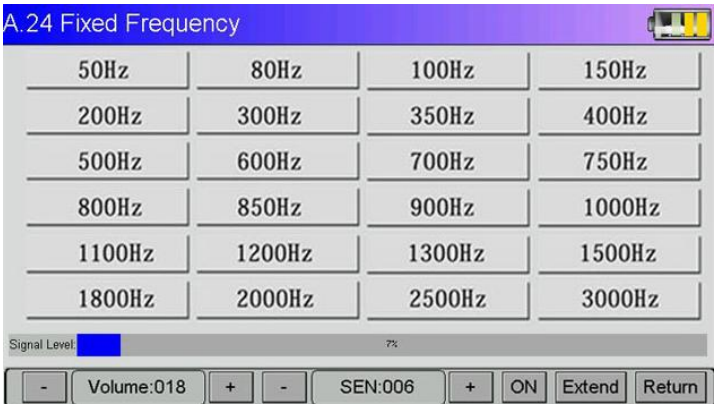
- Enter into the " Filter Analysis ", the eight options, click into the item respectively.



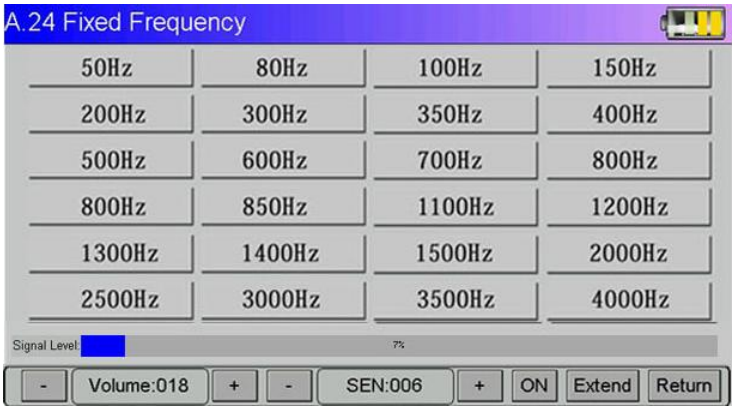
■ Select and enter "A. 24 fixed frequency ", you can see there are 24 center frequency within the menu, click to select one of the center frequency. The center frequency of each model as shown below:



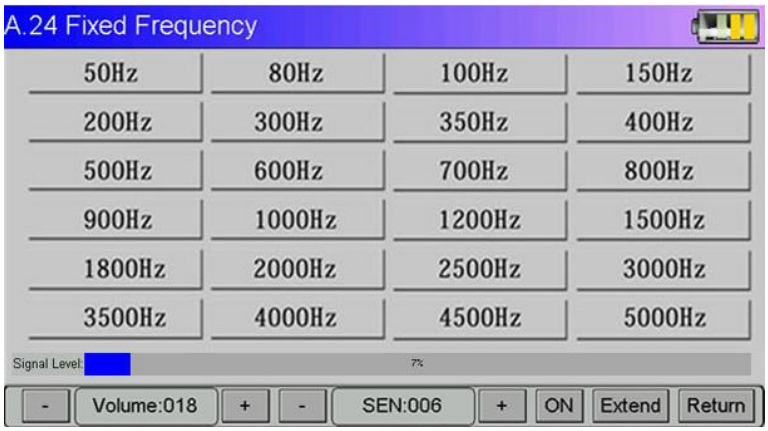
● KT-200L



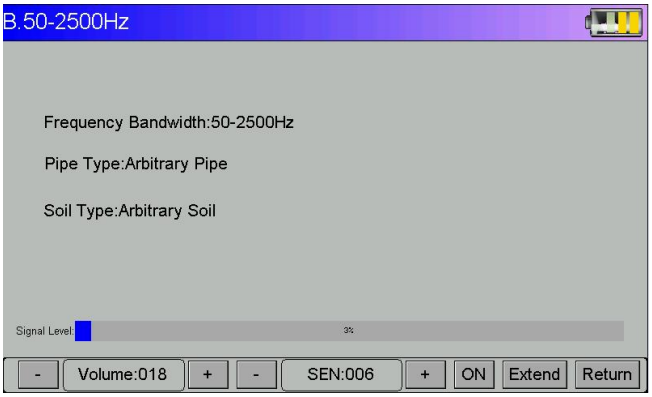
● KT-300L



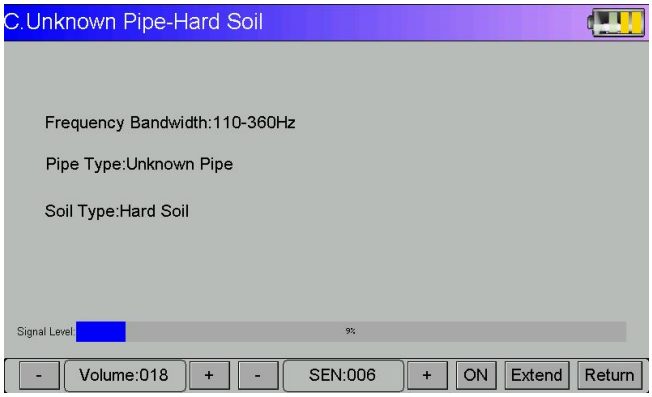
- KT-400L



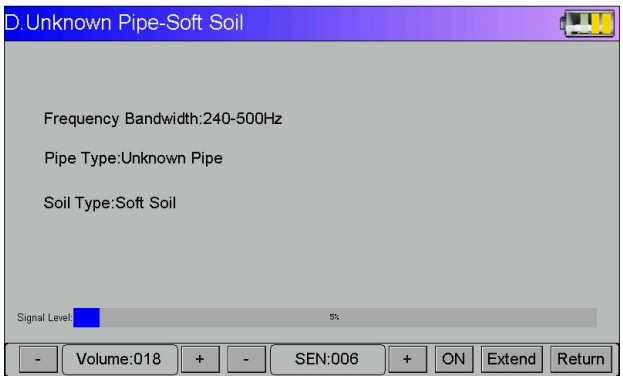
- KT-500L
  - Select and enter " B. 50-2500Hz "



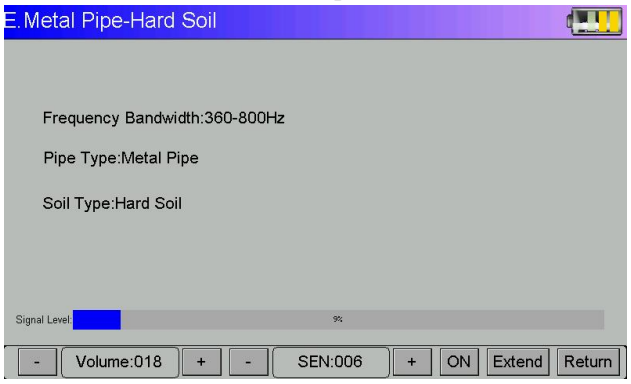
  - Select and enter " C. Unknown Pipe - Hard Soil "



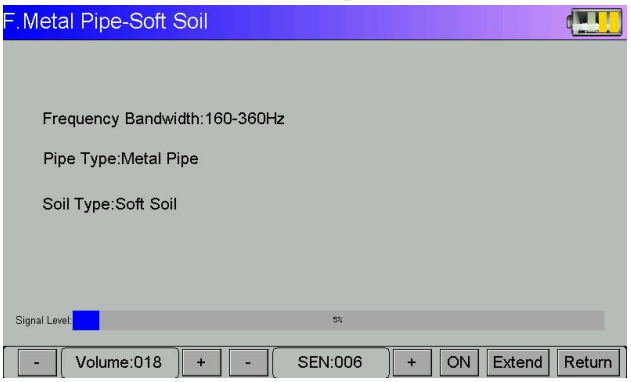
- Select and enter " D. Unknown Pipe - Soft Soil "



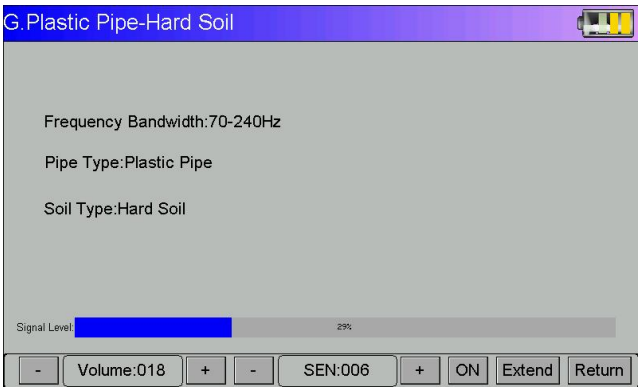
- Select and enter " E. Metal Pipe - Hard Soil "



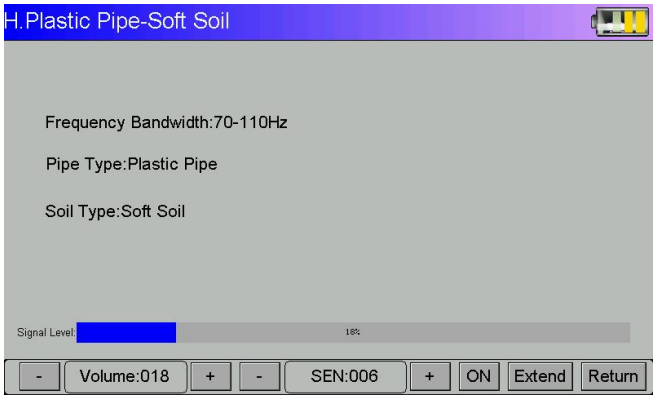
- Select and enter " F. Metal Pipes - Soft Soil "



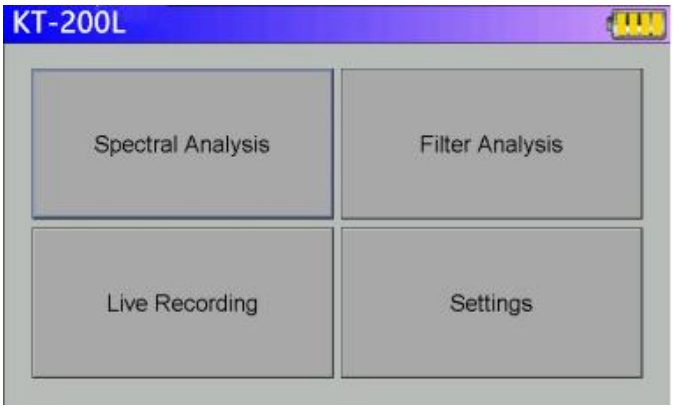
- Select and enter " G. Plastic Pipe - Hard Soil "



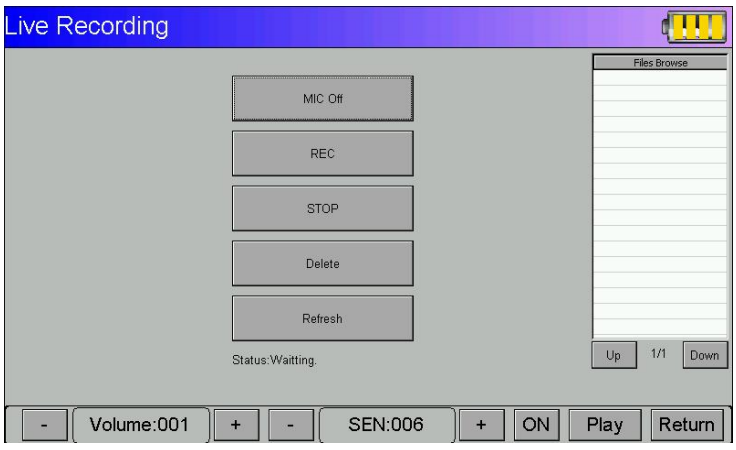
- Select and enter " H. Plastic Pipes - Soft Soil "



- Select the " Live Rcording "



- Enter into the " Live Recording "

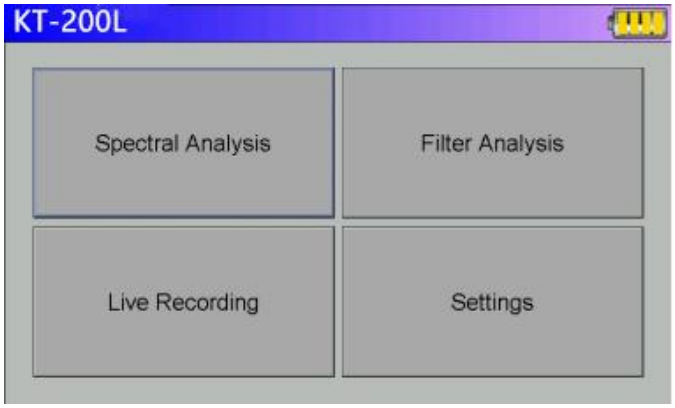


After entering, it can Save 8 sections totaling eight minutes of recording of noise, Click 

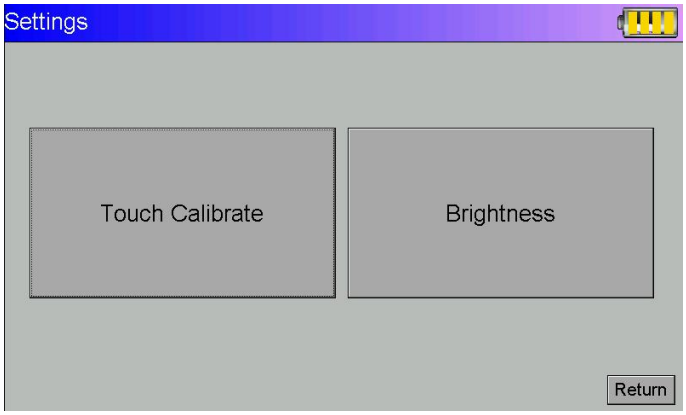
start recording. Click 

, the operator can record voice, it is convenient to distinguish the location later.

- Select “ Settings”

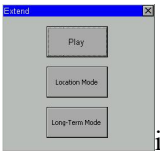


- You can find two options, click each to enter:

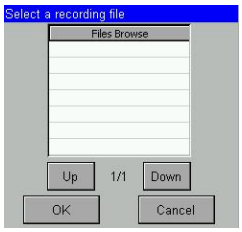


- Click into Touch Calibrate.

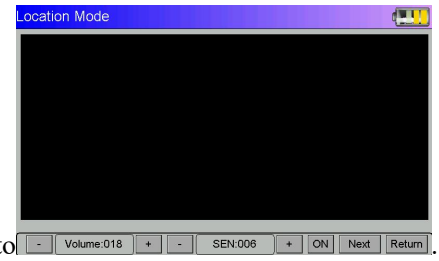
■ Click to enter brightness adjustment.

Both in spectral analysis mode and filter analysis mode, after clicking Extend, both can pop-up 

including Play, Location Mode and Long-Term Mode.

Click Play pop-up 

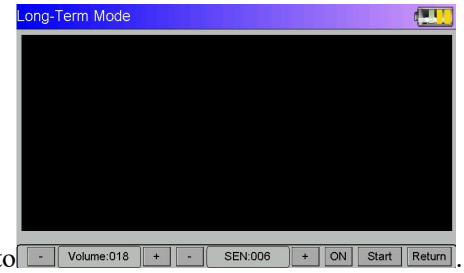
, then click Up 1/1 Down to choose a certain recording, click OK to play.

Click Location Mode into 

.

Click once the lower right corner Location Mode, lock the current measured value. Click twice to enter the next measurement, click Return back to previous option.

■ Click 

into 

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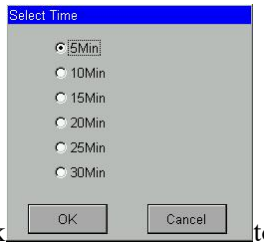
Click 

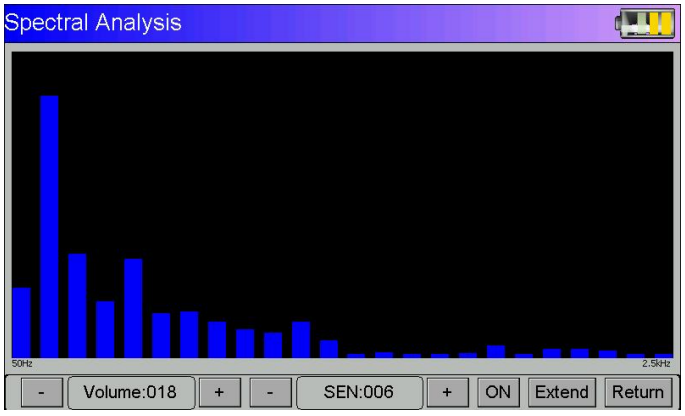
to select the measurement time(5 minutes, 10 minutes, 15 minutes, 20 minutes, 25 minutes, 30 minutes), then click 

to start point of measurement. Click 

to exit.

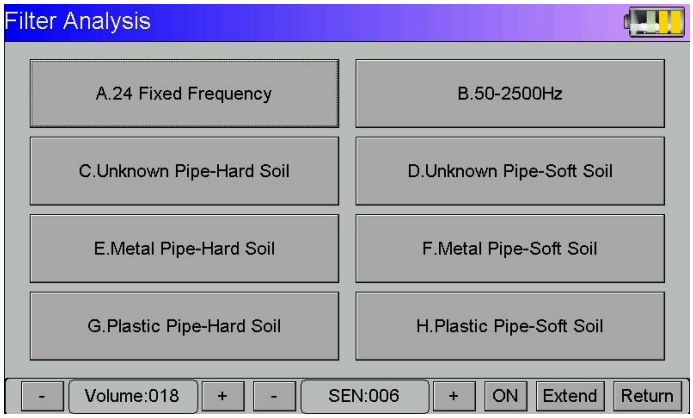
■ Instrument Working Mode

- Spectral Analysis Mode



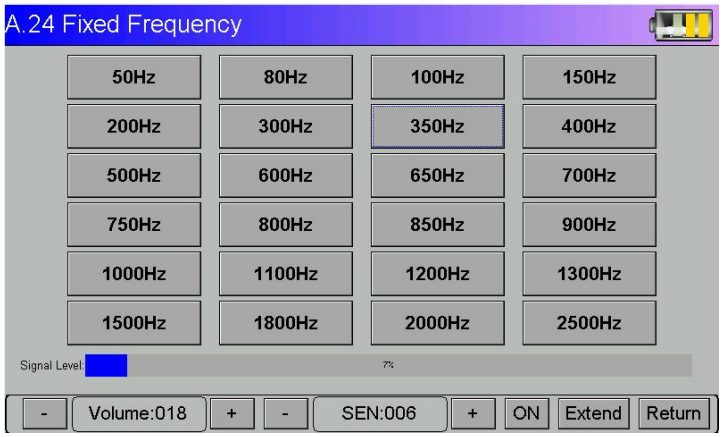
Screen display instantaneous noise signal within 50-5000Hz range. Scroll bars indicate the noise intensity corresponding to the band. Volume and sensitivity default is 10 , through the "+ - " to adjust.

- Filter Analysis Mode

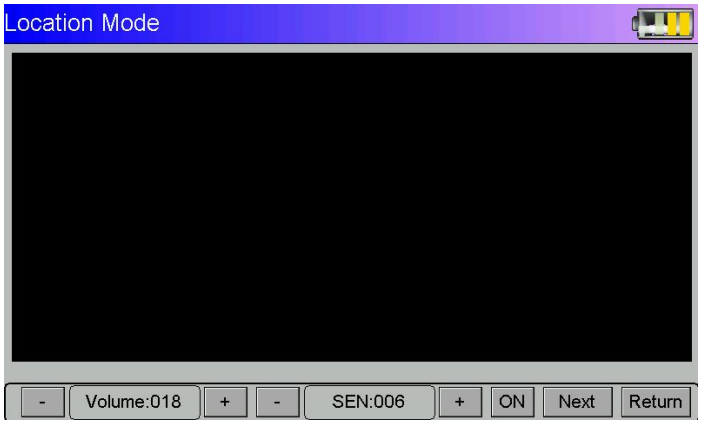


A ~ H screen display total of 8 select buttons , this options is the eight test conditions were based on the actual frequency corresponding configuration. Click to select one of the options, once again click to enter the option.

KT-200L as a example, "A. 24 Fixed Frequency ", you can see the 24 selection buttons, click to select one which indicates the center frequency of the band-pass filter. Scroll bar on-screen indicates the instantaneous intensity of the center frequency of the noise signal , and the right side of the scroll bar represents the corresponding value of the noise signal .

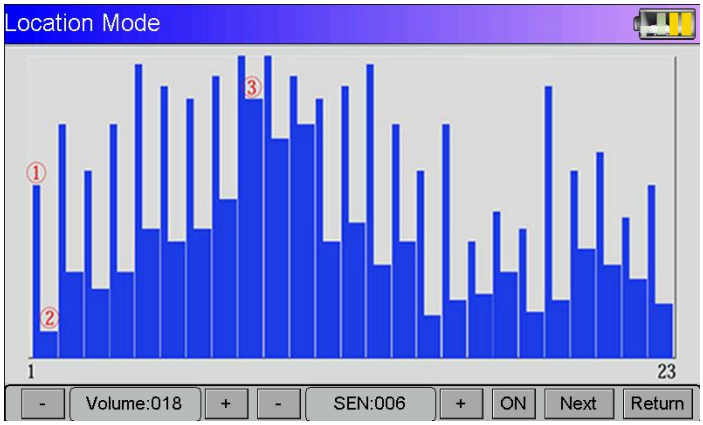


◆ Location Mode



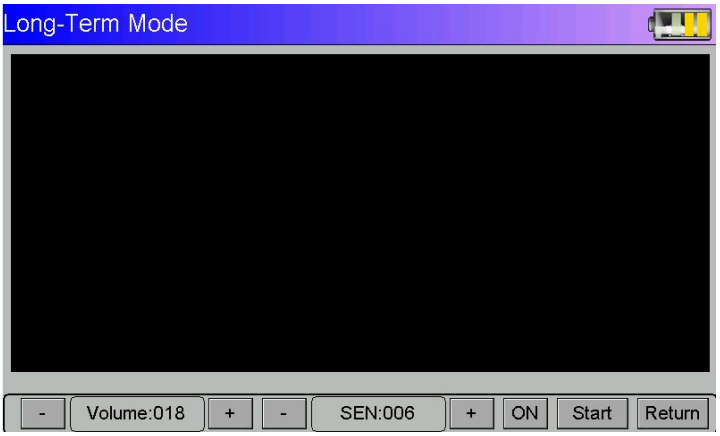
Location mode refers to the precise detection mode. It is designed for detecting in a noisy

environment. Don't need to wear headphones while using this mode, it can eliminate the interference of environmental noise, capture suspected leak signal by software automatically. The following diagram as example :



1. Instantaneous Value (Ambient Noise)
2. The Minimum Value (Leak Noise)
3. Suspected Leakage Point

◆ Long-Term Mode



Long-Term Mode refers to conduct further analysis to determine the suspicious leakage points detected in preliminary investigation. It is in order to exclude suspected leak but is actually three direct links, noise impact sound of water at the valve or other underground facilities issued in order to find the true leakage points and design. Also you don't need to wear headphones while using this mode.

Using point measurement mode, the sensor must be fixed at a certain suspicious leakage point, choose a good monitor time (5 minutes, 10 minutes, 15 minutes, 20 minutes, 25 minutes, 30 minutes) to record the minimum value of each segment of the noise signal within a given time automatically.

Long-Term Mode can be divided into the following two conditions:

(1) The sensor direct contact with the pipe for continuous monitoring

- Pipeline flow is small: whether to raise or lower the sensitivity, the curve volatility is not big, can judge where is not the leakage point. (See Figure 1, Figure 2)

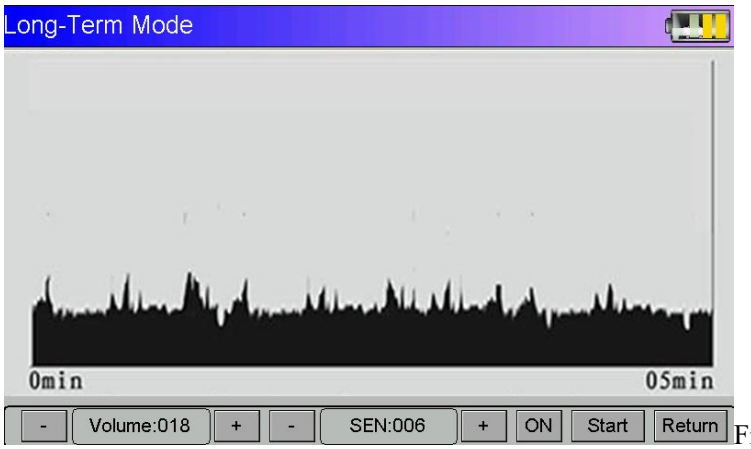


Figure 1

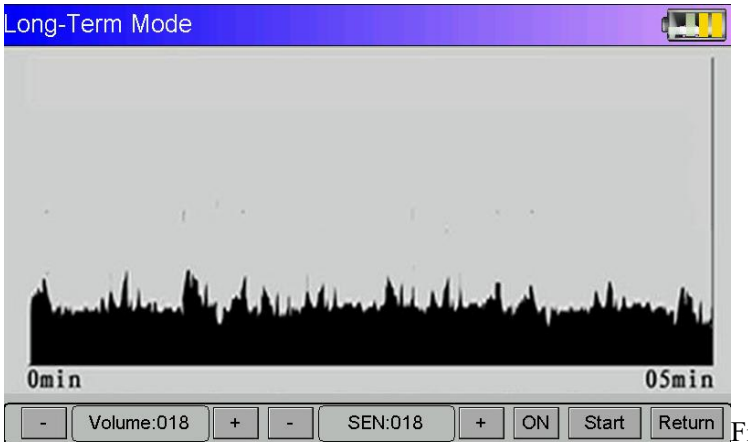


Figure 2

Whether to raise or lower the sensitivity, the curve volatility is big, can judge where leaks . (See Figure 3, Figure 4)

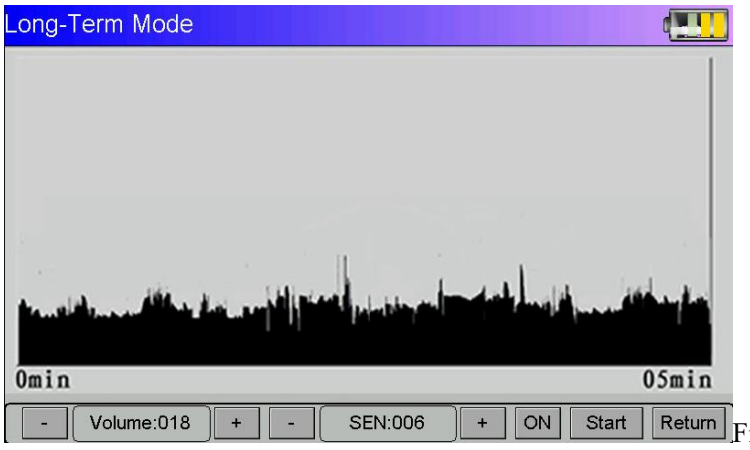


Figure 3

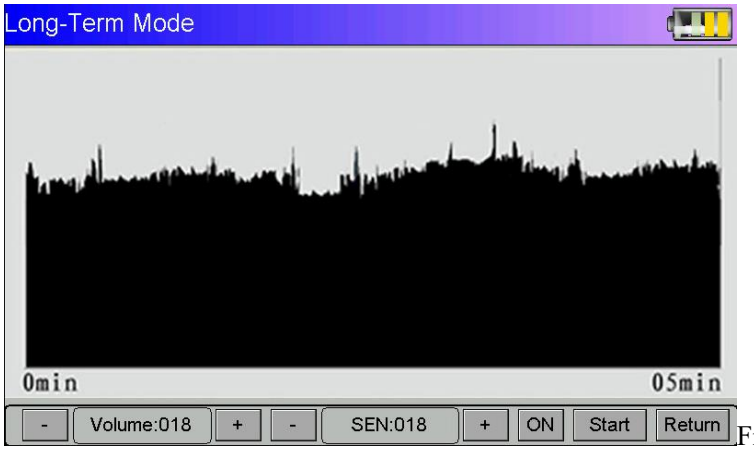


Figure 4

- Intermittent increase and decrease in water pipes and a larger amplitude: whether to raise or lower the sensitivity, the recess amplitude of increase and decrease is not big, can judge where no leaking. (See Figure 5 , Figure 6）

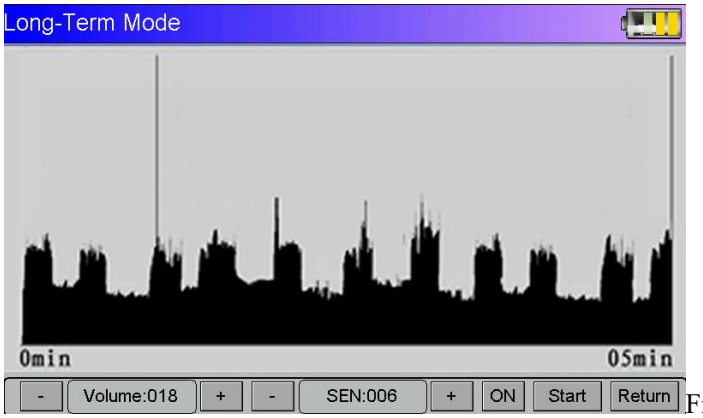


Figure 5

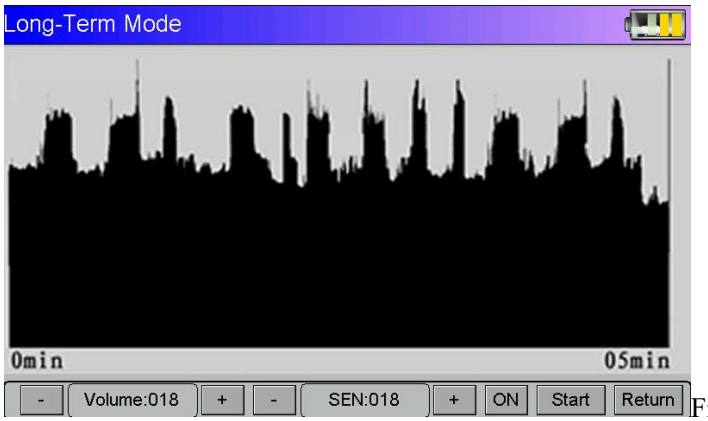


Figure 6

Whether to raise or lower the sensitivity, the recess amplitude of increase and decrease is big, can judge where is the leakage point. (See Figure 7, Figure 8 ）

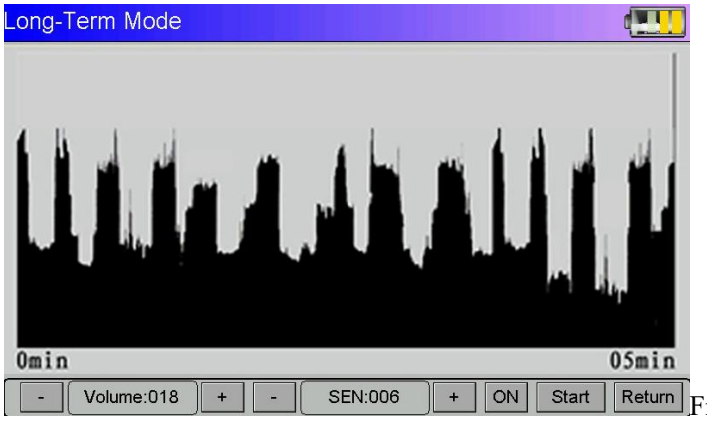


Figure 7

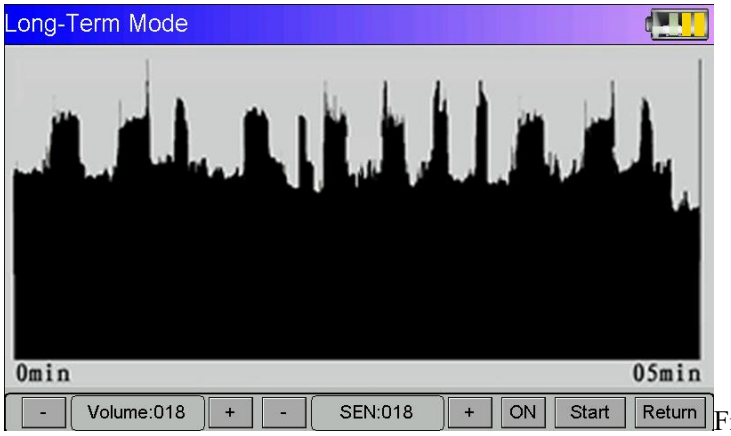


Figure 8

■ Pipeline Flow is Larger

Whether the sensitivity is raised or lowered, curve magnitude has been higher in value, can't judge the leakage point, should find another time monitoring. (See Figure 9)

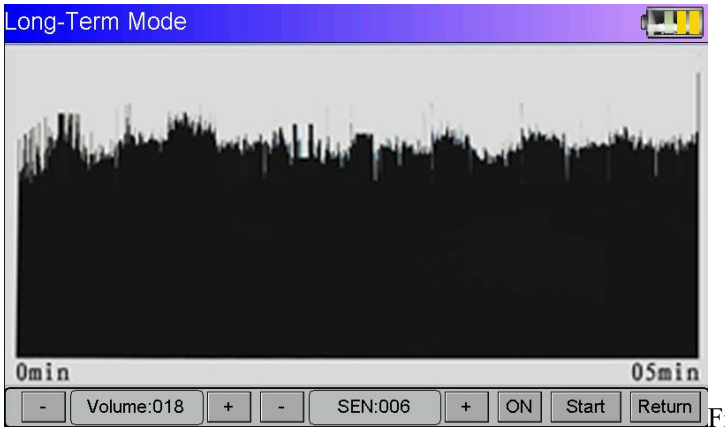


Figure 9

(2) The sensor is placed on the ground above the water leakage point, carrying out the continuous monitoring of two different periods of peak water and low peak. In this case, the value of the sensitivity should be set to the same value.

- In the same suspected leakage point, curve amplitude is high in peak water while the curve is at the low peak showed higher amplitude. (See Figure 10 , Figure 11）

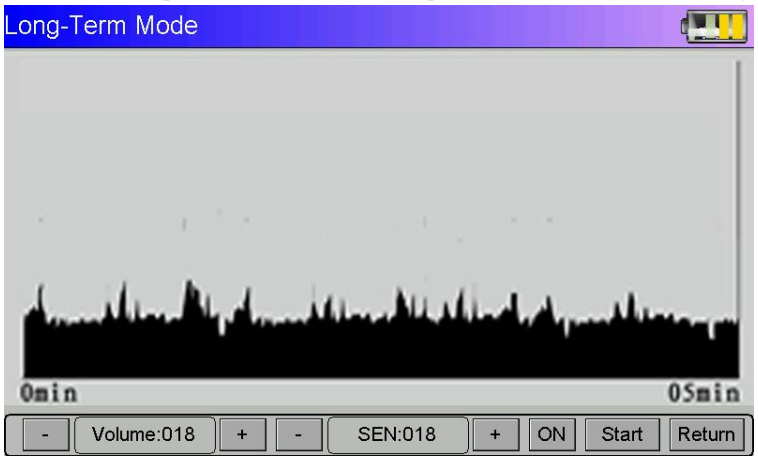


Figure 10

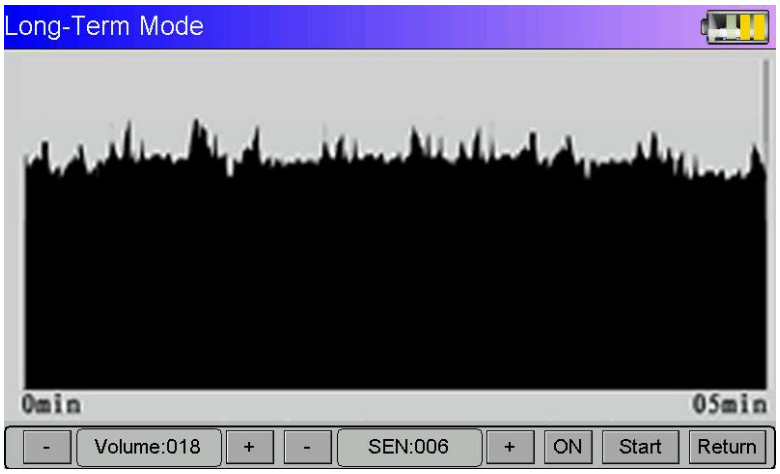


Figure 11

Proving low water peak, because the water pressure increased, leakage noise enhance, resulting in the amplitude of curve increased, can judge where leaks.

- In the same suspected leakage point, curve amplitude is higher in peak water while the curve amplitude reduce at the low water peak. (See Figure 12, Figure 13）

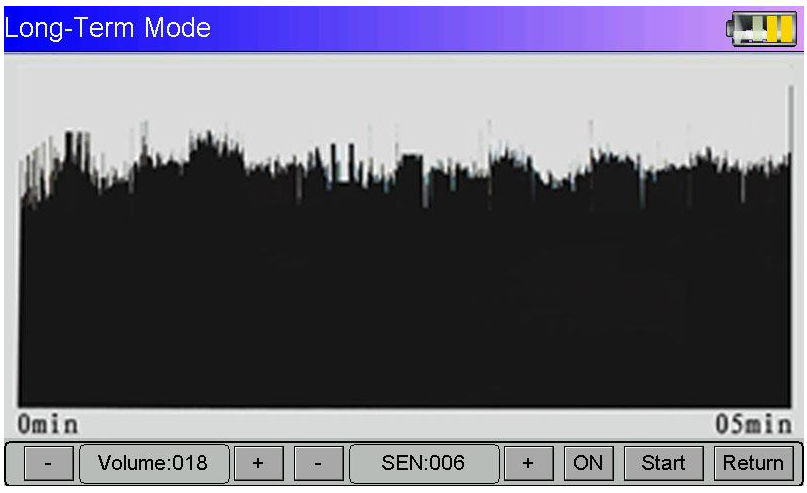


Figure 12

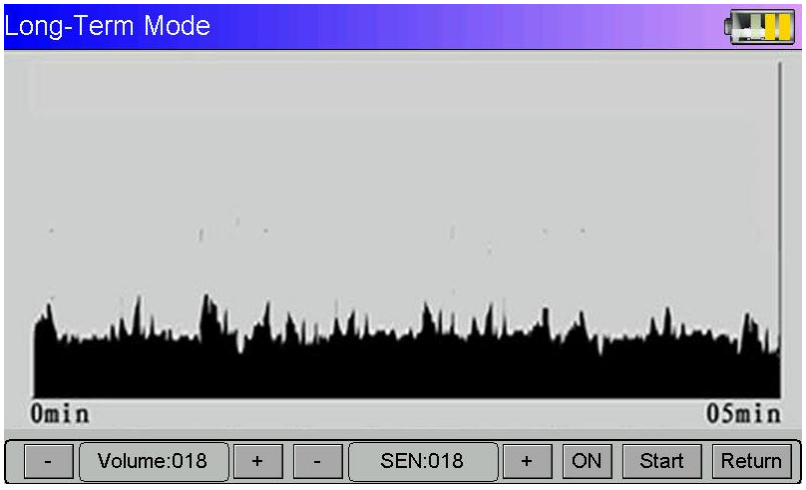


Figure 13

Proving in water peak, the monitored noise is the sound of water or other external causes, it can judge where is not the leakage point.

■ Faults and Diagnostics

Fault Description	Caused Reason	Method of Exclusion
Booth No Display	● Low battery ● Test takes about 5 seconds ● The internal circuit close when charging status	● Charge the battery or replace ● Waiting for self-test ● Unplug the charger
Instruments Boot No Reaction	● Sensor poor contact ● Low battery	● Check the sensor cable ● Charge the battery or replace
No Sound From Headphones	● No signal output from main interface ● Headphones failure	● Click into work mode ● Replace the headset
Headphones Too Loud	Volume or sensitivity is too high	Turn down volume or sensitivity
Touch Unresponsive	● Operation Error ● Equipment failure	● Press the power key to restart ● Contact vendor to inspect

■ Guide for After-sale Services

- Within two years of the purchase date, if instrument quality problems, please send us the photos, we will send the required part or repair for you. Each of us shall take care of the corresponding shipping cost on each side.
- Instrument warranty does not cover the accident, misuse, neglect, alteration, modification, magnetized, unauthorized service and damage caused by prolonged exposure in corrosive salt mixture.
- If need to purchase related accessories, you can contact Hunan Puqi Geologic Exploration Equipment Institute customer service.

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