## Safety instructions

In order to avoid and prevent electric shock, burns or personal injury, please read this manual carefully.

Note: the condition that may cause damage to instrument or error detection results.

Warning: is the situation may cause harm to the user or action.

Notice

⚠ Electrical contact may cause electrical shocks, severe injury or death. In order to avoid personal injury or death caused by electric shock, please operate strictly according to instructions.

Please read all the contents of this manual carefully.

Please use the product according to this manual, otherwise, the protection function provided by this product will be invalid or weakened.

Please do not use the test line for damage or metal exposure.

If the product is damaged, such as shell rupture, please don't use it.

Do not use this product in power storm, wet weather or thunderstorm weather.

The cable lines do not use this product with a strong detection (such as the 220V power line).

Do not use this product in the presence of flammable gas, high dust or water vapor.

Do not access the power supply beyond the detection operating voltage range.

Do not use incorrect products with no battery back cover or rear lid.

Must be the test line and the measured line open the battery cover before separation.

Do not try to repair this product, this product does not contain the user's own replacement parts.

For your safety, please bear in mind "safety first":

Voltage over 30V AC or 60V DC can cause electric shock.

The use of appropriate personal protective equipment, such as: safety glasses, masks, insulation gloves, insulation boots and insulation pads.

When charged, don't make yourself grounded.

When using the crocodile clip test line or adapter jumper, always connect the ground wire to the zero line.

## Summary

This instrument is a multi-functional handheld cable testing tool. The cable type is enhanced, the function is more, and the scope of application is wider. It is a necessary testing tool for Telecom engineers, wiring engineers, network maintenance personnel, etc..

## major function

Line finding function: it can directly find the line of RJ11, RJ45 and BNC interface cable, and can find the line of other metal wire through adapter.

When the cable line is searched, it is not necessary to peel off the outer line of the line, so it is simple, fast and can judge the location of the breakpoint of the line.

It can be used to find the line of any weak Ethernet device, such as Ethernet switch, router and so on.

Detecting network cable: it can detect the line sequence of the network cable completely, detect the disconnection, short circuit, wrong, reverse connection and winding error of the network cable.

Line level and positive and negative polarity detection.

The telephone line state detection: telephone line state detection work in (idle, ring, hook) and distinguishing the TIP or RING line.

Continuous (pass) detection of conductors.

Connection between network cable and switch port.

It has the function of low voltage prompt, and the receiver has the function of illuminating lamp.

## Symbolic description

| | |
|---|---|
| ⚠ | Important safety information should be read before use. Incorrect use may cause damage to the equipment or its components. |
| ⏚ | Ground |
| ▣ | Double insulation protection |
| CAT Ⅱ | Class II measurements are suitable for testing and measuring circuits directly connected to power points (outlets and similarities) of low voltage power supplies. |
| CAT Ⅲ | Class III measurements are suitable for testing and measuring circuits connected to distribution parts of buildings with low voltage power supplies. |
| CAT Ⅳ | Class IV measurement circuits for testing and measuring power connections to building low voltage power supplies. |

## Description of each part of the instrument
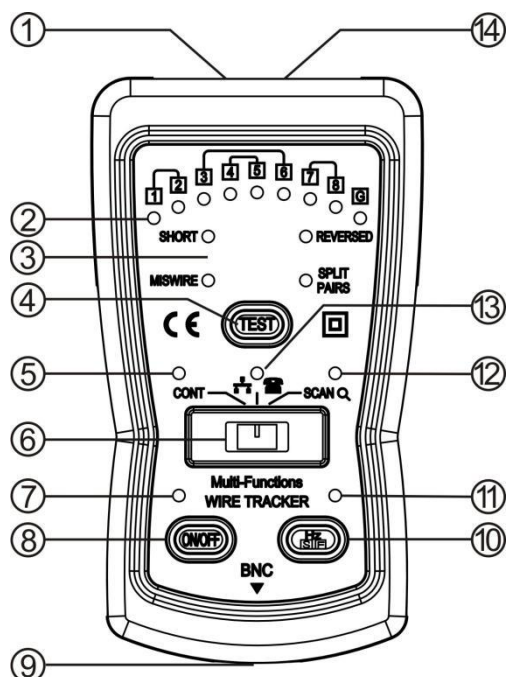


1. transmitter on the RJ45 interface: Standard RJ45 network interface, used for line search, alignment, line detection.

2 lines to the indicator light: the corresponding line of the wire is lighted when connected, the circuit is not lighted, and the wrong indication light is also lighted when there is mistake.

3 error indicator: when the line detects error, the wrong type indicator light.

       Short error indicator light;

       Wrong to wrong indicator light;

       Reverse error indicator;

       String error indicator light.

4 TEST test key: start / stop button for line detection.

5 CONT status lamp: when the line is connected, the lamp will be lighted, and the smaller the line impedance is, the brighter the lamp will be

6 Function dial switch: select instrument measuring function. CONT: continuous or cable online detection gear.

📇📞 ：Network function detection, telephone line state detection, level detection function gear.

SCAN Q：Transmitting audio function stalls.

7 Power indicator: when the instrument power is turned on, it is flashing when it is under voltage.

8 Transmitter power switch: press start once, and then shut down again.

9 BNC interface: Standard BNC interface, convenient for coaxial cable with BNC interface to find the line.

10 The scanning speed or the audio selection key " (Hz) "： in line detection function, press this key can change fast or slow scan; in line function, press the button to change the transmission of audio frequency.

11 Scan speed or audio selection indicator: fast scan or high audio when the light is lit.

12 Audio output indicator: when the audio signal is output, the lamp is lighted.

13 Telephone line status indicator: This is a two color lamp, the phone will display red or green in different working states, or display different colors when the level is detected.

14 RJ11 port: telephone working state, level detection and other metal wire alignment interface.

15 The RJ45 interface on the receiver: Standard RJ45 network interface, used for line detection.

16 Receiver power switch: press the open power supply, switch off the power supply.

17 Light switch: press the open light, bounce the lamp.

18 Line search key SCAN: press this button and keep it when searching line.

19 Knob: adjust the audio volume received.

20 Lighting: auxiliary lighting for insufficient light.

21 Battery indicator light: hold down the button to find the line, the lower the battery power, the darker the lamp.

22 Probe: line close to the detected cable for receiving audio signals.

23 Headphone jack: connect the headset
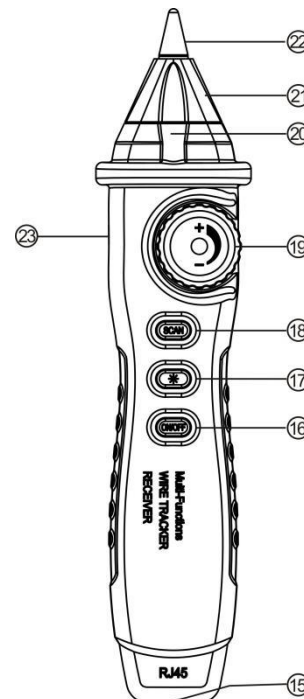
## Functional operation

### 1, line search function

Line finding function is to find the required line pairs quickly in many line pairs. The instrument is suitable for direct line finding of RJ45 interface line, RJ11 interface telephone line and BNC interface line, and other metal wires can be switched by adapter. Operation method:

① The transmitter power is on, the power indicator light emitter, start working.

② connect one end of the cable to the corresponding port of the transmitter (such as RJ45, RJ11, BNC) or connect to the RJ11 port through the adapter.

③ Switch the transmitter's function selection switch to the " SCAN Q " position, and the TONE indicator lights up to indicate that the transmitter begins to send audio signals to the cable to be detected.

④ The power to turn on the receiver, the receiver of the handheld receiver and hold the "SCAN" button at the other end of the cable is to be measured (such as telephone line wiring cabinet, wiring boxes, hubs, switches and other lines around the pile) to detect, by comparing the size of the sound receiver, a sound cable to probe the biggest is to looking for cable.

⑤ The knob to change the volume can be adjusted by adjusting the size of the volume on the receiver in the detection process, but also through the transmitter on the "🔘Hz" button to change the audio frequency from the transmitter, in order to adapt to the actual environment.

⑥ If a lot of noise or sound receiver is very small, please use the clip attachment into the RJ45 or RJ11 interface, and the clip on the ground (such as water, buildings or equipment grounding metal shell etc.), please refer to the following diagram. Note: in noisy places, headphones are used to access the receiver's headphone jack to help find the line.
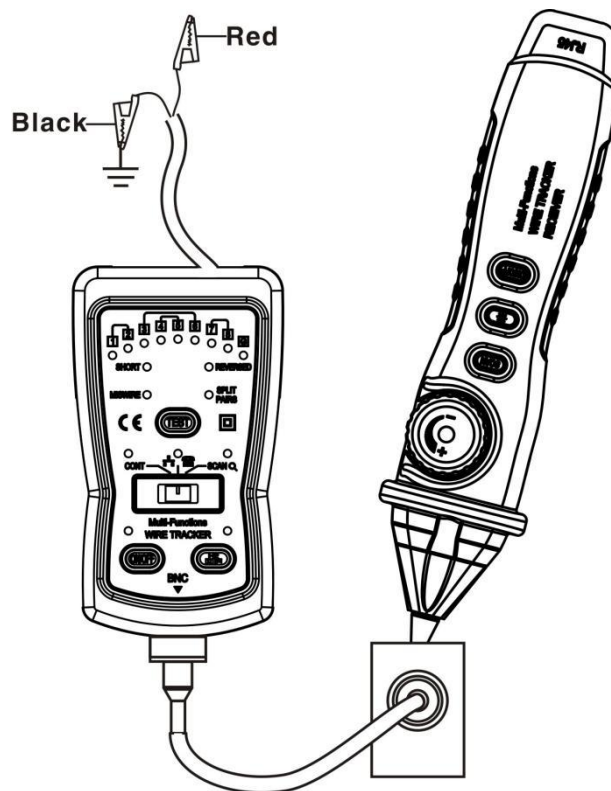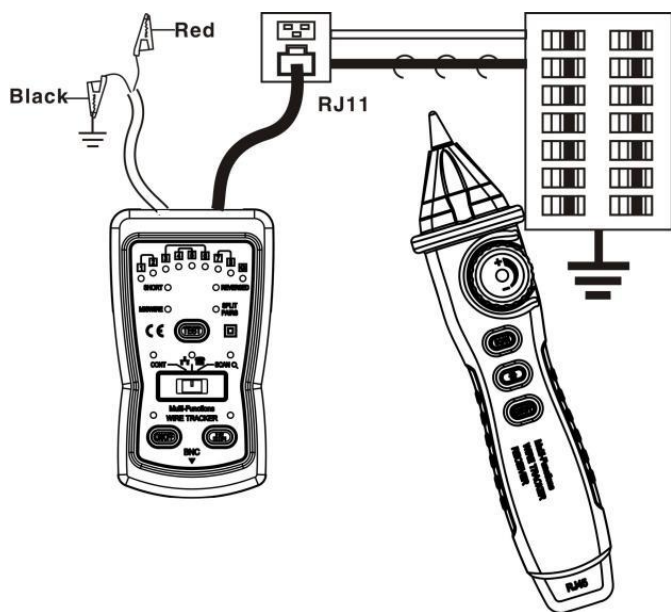


Schematic diagram of line finding by BNC



Schematic diagram of line finding
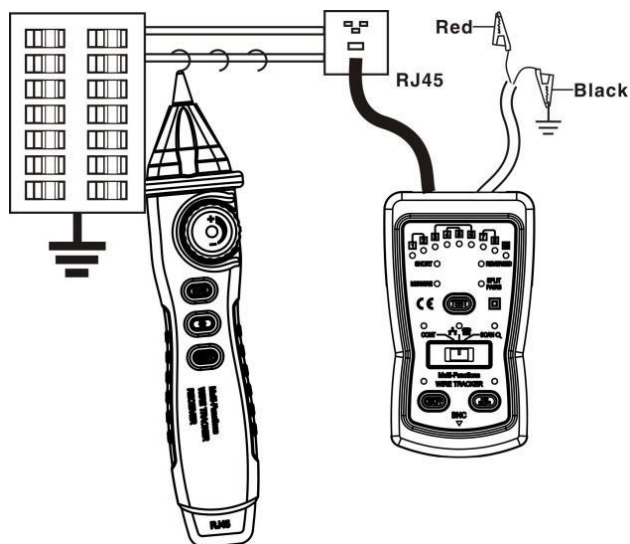


Schematic diagram of line finding
by telephone
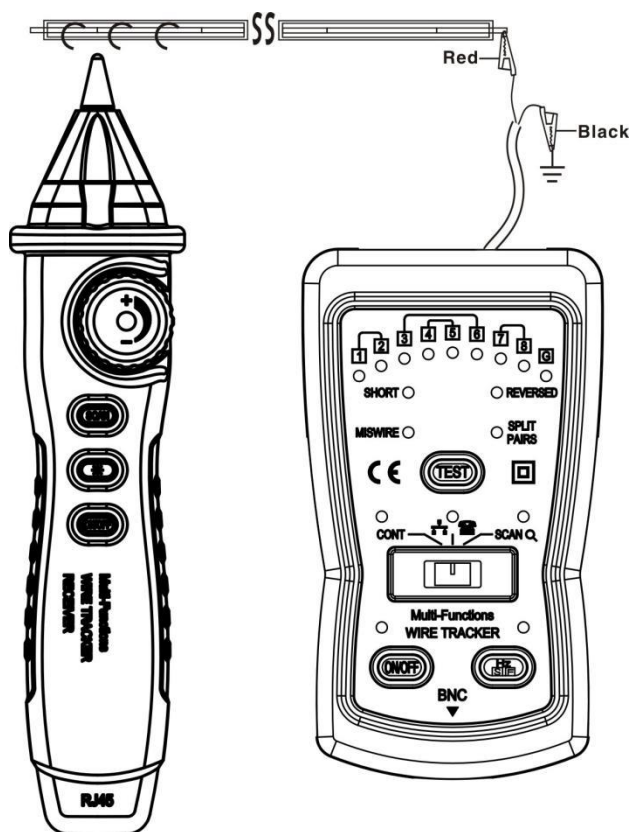


Wiring diagram of other metal wires

## 2、Cable detection:

Line detection is open circuit, short circuit, reverse, right and wrong, on condition of detection around the physical connection cable.

Instructions: when the corresponding fault line or line of failure, the corresponding line or line of lights and fault lights will be lit up at the same time; when the cable is correct, the line indicator lit a lamp does not light, fault.

◆ The open type cable: some so-called "open" does not belong to the abnormal phenomenon, so the instrument is not set for the "open" error indicator. The typical cable usually has 2 to 4 twisted pair, RJ45 socket pins twisted pair line without corresponding connection is not lit on the lights, by the user according to the actual twisted pair connection to determine which line of light should be lit, which line of lights should not be lit.

◆ The short answer: as shown below.

◆ I go to the wrong: as shown below, the two line end of dislocation.

◆ The reverse: as shown below, to the end of the dislocation line.

◆ The series wound: as shown below, a root of the wire wou
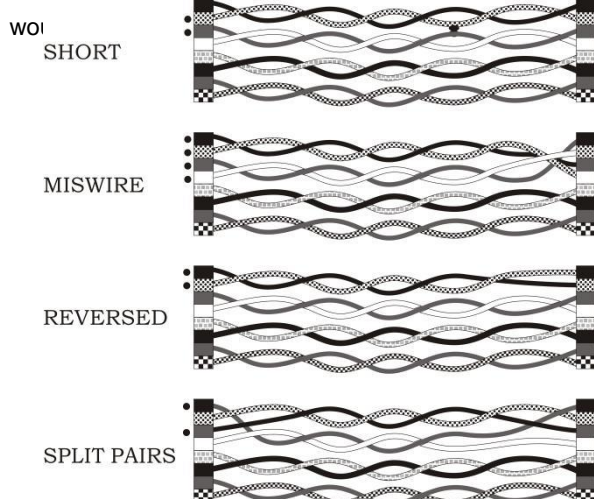


SHORT

MISWIRE

REVERSED

SPLIT PAIRS

Operation method:

① The transmitter on the power, the power indicator light emitter, began to work, and then the function of toggle switch to the "🖧☎" line function position (neutral position)

② The cable end inserted in the socket on the RJ45 transmitter.

③ Insert the other end of the cable into the RJ45 socket of the receiver.

Click the "TEST" button, and then start testing. Line to light indicator and fault indicator will indicate the test results.

④ The instrument will cycle detection until you click the "TEST" button again to test the result bundle.

⑤ In the detection process, the key"(Hz)may be changed to indicate the speed of the indicator display scan.

For example: cable line 1-2 and line to 3-6 short circuit, the indicator light is as follows:

The 1-2 and 3-6 lines are lighted on the indicator light, and the short indicator light is lighted.

**Be careful：**

**There is a line of detection instruments after error types will no longer check the line to the other mistakes, so for a line of, each one can only detect the detection line of an error type, only will continue to test the line on the line which he faults for troubleshooting detected before;**

**In the process of displaying the test results, if the cable to be tested is disconnected, the test result will be stopped until the indicator lamp is displayed.**

## 3、line level or polarity detection:

The detection of DC level or positive and negative polarity of the line can only be detected by the transmitter. Operation method:

① The transmitter on the power, the power indicator light emitter, began to work, and then switch to the function "🖧☎" telephone line function position (neutral position).

② The adapter RJ11 crystal head terminal transmitter RJ11 port, the clip to the line to be measured.

③ If the telephone line status indicator (in the middle of the knob switch) is bright red, the red clip end is positive, and the black clip end is negative; if bright green, the red clip end is negative, and the black clip end is positive.

④ level determination, the brighter the lamp, the higher the level; the darker the lamp, the lower the level.

## 4、State detection of telephone line:

The detection of all kinds of telephone lines in the work can only be detected by the transmitter.

The operation method of determining TIP or RING line:

① The transmitter power is switched on, the power indicator is lighted, the transmitter starts to work, and then the dial button is switched to the telephone line"🖧☎" function position (middle position).

② The RJ11 crystal head of the adapter is connected to the RJ11 port of the transmitter, and the red black clip is clamped to the telephone line to be tested.

③ If the telephone line status indicator (in the middle position of the dial button switch) bright red, the red clip end for the TIP line, the black clip end RING line; if the bright green, the red clip end is RING line, TIP line end black clip.

**Determine the telephone line in idle, and ringing off the hook:**

① The transmitter power is switched on, the power indicator light is lit, the transmitter starts to work, and then the function dial switch is put to the "telephone line" function position (middle position).

② **Plug the adapter's RJ11 crystal head into the RJ11 port of the emitter, clip the red clip onto the RING line, and clip the black clip onto the TIP line.**

③ If the telephone line status indicator (in the middle position of dial button switch on the light green), said the telephone line is idle; if not on the telephone line is off hook state; if the light green or red and regular flashing said telephone line in ringing state.

Note: in the ringing state, the other indicators may have an impact, but will not affect the test results.

## 5、continuous wire (path) detection:

There are two ways to detect the connectivity of a line:

① Is used to detect the transmitter, the transmitter power is on, the power indicator light emitter, began to work, and then the function of dial button switch to the "CONT" position, and then the adapter RJ11 crystal head terminal transmitter RJ11 port, the clip to both ends of the line to be measured, if the "CONT" lights it is a continuous line. Line impedance is more bright lights.

② The use of line detection method, method of operation with line function, if the receiver can detect the audio on the other end of the line, the line is continuous.

## 6、network and switch port connectivity detection:

In the case of continuous open network connection with the switch, it can directly detect whether the network cable is connected with the switch, only the transmitter can be detected. Operation method:

① Turn on the power of the transmitter, the power indicator lights up, the transmitter starts working, and then switches the function dial switch to "CONT" position.

② the RJ45 crystal head of the wire to be measured is connected to the RJ45 interface of the transmitter, and the other end is connected to the RJ45 interface of the switch.

③ Click the "TEST" button to start the test. The line pair indicator will indicate the result of the test. If the line is connected to the switch, the corresponding light will be lighted; if not, it will not be lighted.

④ The instrument will cycle detection until you click the "TEST" button again, and the test will be finished.

⑤ In the detection process, the "SEL" key may be used to change the display speed of indicator light.

Note: in the process of displaying the test results, if the cable to be tested is disconnected, the test result will be stopped until the indicator lamp is displayed.

## 7、Undervoltage indication of battery:

Transmitter undervoltage indication: when the emitter battery is lower than the working voltage, the power indicator will flicker on the emitter. When the indicator flashes, please replace the battery in time.

Receiver battery voltage indicator: the receiver probe has a light emitting diode, the lower the battery voltage, the darker the light emitting diode. When the light is dark, the emitter is provided to line function and in working condition, the RJ45 interface with the receiver probe near the transmitter, and the receiver of the

volume control knob to the position of the maximum volume, if you don't hear a sound receiver, please replace the batteries.

## General technical index

➢ The temperature range:

Working temperature: 0-40 degrees, the maximum relative humidity of 80% (non condensing)

Storage temperature: -10-50 C, maximum relative humidity of 80% (non condensing, non battery)

Altitude: <2000m (m)

Explosion proof type: IP40

Transmitting signal distance: >3000m

Safety level: IEC61010-1 600V CAT III, pollution grade II

Battery: transmitter 1.5V/AA, 3; receiver 6F22/9V

Size:

Weight: emitter about (excluding battery); receiver about (excluding battery)

## Maintain

Unless you are experienced maintenance personnel and have relevant calibration, performance test and maintenance information, don't try to repair the instrument.

Use a wet cloth and a small amount of detergent regularly to clean the instrument shell. Do not use abrasives or chemical solvents.

## Battery replacement

Please click the procedure to replace the battery:

1.screws with a screwdriver unscrew the battery cover.

2.remove the battery cover, remove the old battery.

3.replace the same specifications of the new battery.

4.fit the battery cover and tighten the rear cover with screw