MULTIFUNCTIONAL TESTER

USER MANUAL

Spacetronik SP-LT04

SAFETY INFORMATION

This series of meter fulfill IEC1010 (International Electrotechnical Commission). Please read the Safety Information before use.

Read the technical specifications carefully. Only the model with multi-meter function is allowed to measure DCV/ ACV and Current with 36V or above.

Never measure 36V or above (except PoE) if the model do not have multimeter functions. These voltages pose a shock hazard.

1. For measuring voltage, never input more than 1000V DC or 400V AC (RMS). For measuring current, never input more than 10A.

2.It is save for 36V or below. To avoid electric shock, check the testleads connection and insulation before measure 36V DC or above and 25V DC or above.

3.Remove the testleads from the testing point before switching functions and ranges.

4.The meter already has full protections. But for safety sake, please select the correct function and range.

5.Safety symbols : ⚠ Hazardous voltage, please refer user manual
⏚ Earth 🔋 Low battery voltage

⚠ WARNING ⚠

1.Do not use the equipment if it looks damaged and/or abnormal. The protection in the meter may be damaged if it looks damaged and/or abnormal.

2.Do not input over the range. Otherwise, user may be injury and the meter may be damaged.

3.Do not use the meter just before, during or just after an electrical storm.

4.Remove the batteries if the meter planned to be stored for long period. If the batteries are not removed, battery leakage can damage the meter.

5.The meter is not allowed to search, check energized cables. Contact with energized cable may hurt the users and cause the meter damaged.

6.Only testleads are allowed to connect to the meter when using the multimeter. User may be hurt and/or meter will be damaged if other ports are connected to energized cable (except PoE equipment).

7.Please check the battery if low battery indicator on LCD of main body turns on and/or the red LED on the receiver is flash.

8.Do not open the case. If needed, ask professional to repair the meter.

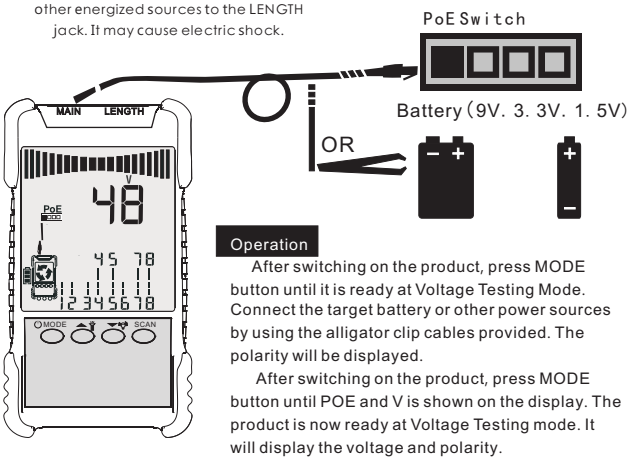
MEASURING VOLTAGE (VOLTAGE)

The product can help to identify some issues on a circuit. The issues include the present of voltage, polarity of voltage. There is no need to use the receiver for this function. Plug the alligator clip cable comes with the product in the MAIN jack on the Main Body. Clip the alligator clips on the objective circuit. If voltage is present on the phone line, conductor 3 and 4 will have a long connection lines. The positive conductor will also flash. If there is no voltage, short connection lines of conductor 3 and 4 will be displayed. Alternatively, user can plug the phone line in the MAIN jack to check if the line is installed with RJ11 plug.

Remarks : It is not allowed to measure AC Voltage and other High Voltage Circuit. Otherwise, it may cause electric shock.

⚠ WARNING⚠

It is damagous to connecting PoE or other energized sources to the LENGTH jack. It may cause electric shock.



Operation

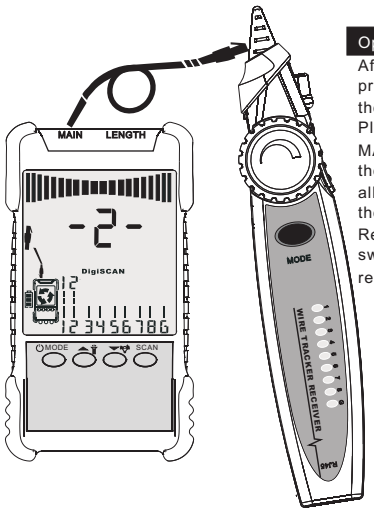
After switching on the product, press MODE button until it is ready at Voltage Testing Mode. Connect the target battery or other power sources by using the alligator clip cables provided. The polarity will be displayed.

After switching on the product, press MODE button until POE and V is shown on the display. The product is now ready at Voltage Testing mode. It will display the voltage and polarity.

The number of the positive conductor will be flash.

CABLE TRACING (SCAN)

This function can help users to identify the target cable from lots of cables. Plug one end of the target cable (such as network cable, phone line and all BNC cable which can be clip by the alligator clip provided) in the MAIN jack on the Main Body. Switch on the Main Body. Select the cable tracing function. For the model without multimeter functions, SCAN button is located at the right side. Press to select the cable tracing function. Pressing the SCAN button on the Receiver for 2 seconds, blue indicator (digital searching) or red indicator (analogue searching) will switch on. Move the Receiver around the uncertain cables (including network cable, patch panel of phone system, connector, hub). Listen and compare the sound signal. When the Receiver is closing to the target cable, the sound level will increase. The loudest sound will be obtained if the Receiver is next to the target cable. For working in noisy environment, press ⌒ button to change signal for easy identification. The product have two analogue signals which indicated by 1 and 3 and one digital signal which indicated by 2 on the display. It can directly plug in the cable if it is installed with registered jack.



Operation

After switching on the product, press MODE button to select the cable tracing function. Plug the testing cable in the MAIN/RJ45 jack or connect the testing cable by the alligator clips provided. Press the SCAN button on the Receiver. Blue indicator will switch on which indicate it is ready for digital tracing. Press

INTRODUCTION

This meter combines with the cable tracing cable length measuring and multimeter functions. The advantage of this meter is the long tracing distance, clear sound signals, rapid and precise cable length measurement, and accurate multimeter. The meter is good tools for laboratories, factories, radio lover, network installer, and technician,

It can real time measuring network cable length, short circuit and circuit break.

The cable tracing function can quickly and efficiently find out the target cable in large number of cables. This function can be used in telephone systems, computer networks, BNC cables and other metallic network cables.

Our digital tracing apply the newest digital noise free technology. It give a good experience to users.

The meter is essential equipment for computer networking, telecom cabling, BNC cabling and other metallic cabling projects.

Working Principal

Cable length measurement is performed by sending a signal to one of the wire in the cable. By receiving and calculating the reflected pulse to get the cable length.

By sending a signal from the MAIN port to the target cable, an analogue signal field will be generated. The receiver will identify the signal field and find out the target cable.

CHARACTERISTICS

1. Network cable length measurement, max. 500m
2. Multimeter functions
3. Cable tracing
4. Nice and professional outlook
5. Many cable testing method and PoE Voltage measurement
6. Flashlight
7. Auto power off
8. Sensitivity / Sound level adjustment
9. Using rechargeable lithium battery for protecting the environment.

PRODUCT INCLUDE

* Transmissor * Receiver * User Manual
* 9V Battery *3.7 Lithium Battery * Alligator Clip
* RJ45 Cable * USB Transformer
* Multimeter Accessories (Testleads and k-type temperature probe)

EQUIPMENT OPERATION

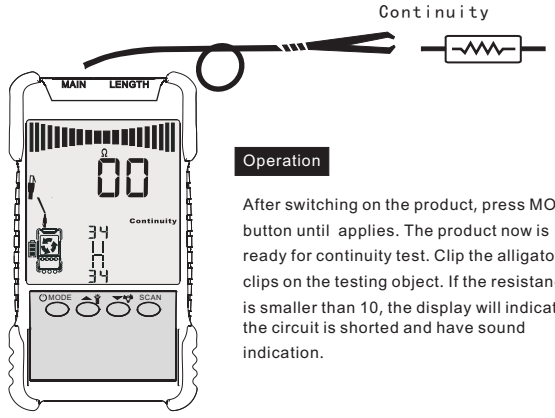
Tracing Cables (SCAN)	Find out the target cable in numerous cables。
Cable Pairing Check (TEST)	Test open circuit, short circuit and cable mapping
V (VOLT)	Check the polarity and voltage of battery/phone line
Continuity Test (OHM)	Check open circuit or short circuit of phone line(phone line should not be connected to any power source)
ID Pairing	Able to check Network Switches and Cables by connecting one end to the Remote ID unit
PoE Test	Checking cable mapping, polarity and voltage of PoE Network Switches
Flashlight	White flashlight
Sensitivity Adjustable	Able to adjust the sound level
Length Measurement	Able to measure cable length, short circuit and circuit break
Cable Tracing Signal Changable	Able to set the frequency for using on tracing
Multimeter	Have DCV, ACV, Continuity, Diode, Voltage, Temperature, NVC, Resistance, DCA and DCV

CONTINUITY TEST (CONTINUITY)

The function is to test the short circuit of a phone line which is not plug in any networks. Ensure the phone line is not powered before testing. The display will indicate open circuit.

For those cables with registered jack, directly plug the cable in the MAIN/RJ45 to test. Otherwise, connect the testing cable by using the alligator clips provided.

This function can also apply to test the continuity of other equipment. The product will display the circuit is opened or not.



Operation

After switching on the product, press MODE button until applies. The product now is ready for continuity test. Clip the alligator clips on the testing object. If the resistance is smaller than 10, the display will indicate the circuit is shorted and have sound indication.

TROUBLE SHOOTING

Main Body
Symptoms： Display is not on or flashing after pressing the Power button
Reasons： Battery gone
Solutions： Charging the Main Body or replace the battery (protected 3.7V lithium battery)

Receiver
Symptoms：Press SCAN button but no sound is generated during cable tracing
Reasons： Battery gone or No battery or Receiver is too far away from the target cable
Solutions： Change battery or enlarge the searching area

OPERATION MANUAL

Following instructions are only applied to the model with multimeter functions.

1.1 Voltage Measuring

1. Plug the black lead to the COM jack. Red lead in the VHz jack.
2. Press DMM button. Select AC Voltage (ACV) or DC Voltage (DCV).
3. Touch the probe on the testleads to the testing point. The product will display the voltage measured. For measuring the DC Voltage, the polarity of red lead will be displayed.

Cautions

a. If 0L is displayed, the measuring voltage is over ranged. Please stop measurement.

b. It is not allowed to measured voltage over 1000V DC or 400V AC.

c. Do not touch the Hi-voltage circuit, never connect network cable, live wire or charging cable when measuring Hi-voltage.

1.2 Current Measuring

1. Plug the black lead to the COM jack. Red lead in the 10A jack.
2. Press DMM button. Select DC or AC Current.
3. Touch the probe on the testleads to the testing point. The product will display the current measured. For measuring the DC Current, the polarity of red lead will be displayed.

Cautions

a. If 0L is displayed, the measuring current is over ranged. Please stop measurement.

b. It is not allowed to measured current over 10A (measuring time less than 10 seconds)

1.3 Resistance Measuring

1. Plug the black lead to the COM jack. Red lead in the VHz jack.
2. Press DMM button. Select the resistance function, touch the testleads across the testing object.

Cautions

a. If 0L is displayed, the measuring resistance is over ranged.

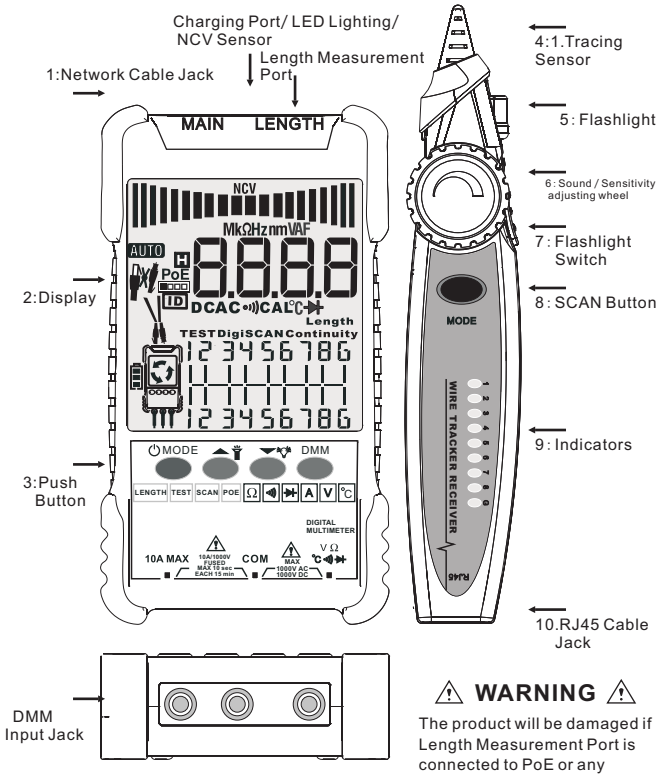
b. 0L will also be displayed if the testing object is an open circuit.

c. Ensure the testing object is removed from energized circuit and/or fully discharge before measurement.

d. Do not input voltage in the resistance range.

e. For high resistance measurement (> 1M), it is normal for taking several seconds to obtain a stable reading.

PRODUCT DESCRIPTION



⚠ WARNING ⚠

The product will be damaged if Length Measurement Port is connected to PoE or any energized devices.

PRODUCT INFORMATION

1.MAIN network cable input jack

MAIN : Connect network cable, phone line and the alligator clip cable to this jack for checking pairs, tracing cable, PoE Polarity checking, battery voltage measurement or continuity;

LENGTH : Connect to this jack for measuring cable length;

2.Result Display

Displaying the product status, testing result, connection indication.., battery power.

3.Push Button

3.1 POWER/MODE button : Pressing 2 seconds to switch on the product; Press to select functions (length - cable pairing - tracing cable - V - continuity - network switch cable pairing - network switch indicator flashing – Remote ID tracing - PoE Voltage - NCV - Length);

3.2 ∧ button : Pressing tracing function, switch between analogue and digital signal. During Cable Length measurement, press to change the pair. During pairing function, perform normal pairing function. Keep pressing switch on / off the display backlight;

3.3 ∨ button : Press to switch between analogue and digital signal. During cable length measurement, select the cable type. During cable pairing check, select the high speed pair checking function. Keep pressing to switch on / off the display backlight;

3.4 SCAN button : press to select the cable tracing function (Only apply to the model without multimeter function);

3.5 DMM button (only for model with multimeter) : press to select the multimeter function. In multimter function, press to select ACV- DCV - Continuity - Diode - Temperature - NVC - Resistance - ACA - DCA)

4 Tracing Sensor : Move this part towards the target cable (network cable, phone line, BNC cable or other metallic cable). Listen the sound level to position the target cable.

5 Flashlight : Location of flashlight. It can be switch on/off by a separate switch;

6 Sound / Sensitivity adjusting wheel : For analogue mode, it used to adjust the sound level. For digital mode, it used to adjust the frequency.

7 Flashlight Switch : Switch on/off the flashlight

8 SCAN Button : Switch on/off the cable tracing function. Pressing 2 seconds to switch on the product, press to switch between analogue tracing, digital tracing, digital vibrating mode. Pressing 2 seconds again to switch off.

9 Indicators : at the cable pairing function, LED on indicating the relative cable is in good condition.

10.Rj45 Cable Jack

OPERATION MANUAL

1.4 Temperature Measuring

Press DMM button. Select the temperature range. Plug the cold end (free end) negative (black) end of the thermocouple sensor in COM jack. Plug the red end at the VHz jack. Put the sensor part of the thermocouple in the testing objects or the surface of it. The temperature will be displayed.

Cautions

a. Please use only k-type thermocouples. Otherwise, the reading may not be accurate.

b. Never input voltage in the temperature range.

1.5 NCV Detection

Press DMM button, select NCV detection range. Move the sensor close to the testing object.

The voltage will be displayed on the analogue bargraph. When voltage is detected, the buzzer will create beep sound.

1.6 Continuity Test

1.Plug the black lead to the COM jack. Red lead in the VHz jack (Please be noted that the polarity of the red lead is "+").

2. Press DMM button. Select the continuity function. Touch the testleads across the testing object. The buzzor will sound if the resistance between the 2 contact points is less than 50Ω.

1.7 Diode Test

1.Plug the black lead to the COM jack. Red lead in the VHz jack (Please be noted that the polarity of the red lead is "+").

2.Press DMM button. Select the diode range. Connect the red lead to the positive side of the diode. Connect the black lead to the negative side.

1.8 Auto Power Off

The equipment will enter the sleep mode if there is no function or button press for 20 minutes. In the sleep mode, press Power button will return to normal.

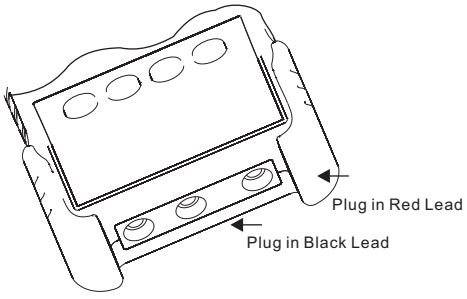
OPERATION MANUAL

2. 1 Testleads connection

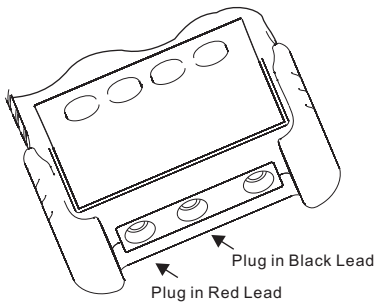
The product have input jack indicators to remind users to plug-in the correct jacks.

Mis-plugging the leads may damage the product and/or hurt the users.

Please ensure the connection is correct before measurement.



Indication of testleads connection for DC/AC Voltage/ Resistance/Diode/Temperature Measurement



Indication of testlead connection for 10A DC/AC Current Measurement

DIGITAL CABLE TRACING

Product is a noise free digital wire tracker. The product apply the advance digital technology to achieve precious digital noise free cable tracing. Following is the comparison of digital wire tracker and analogue wire tracker.:

Operation

Operation of the main body is the same. The receiver operation is different. Press SCAN button for 2 seconds to switch on. Press to switch between digital cable tracing, digital tracing with vibration (if the model have), analogue cable tracing. Press 2 for 2 seconds to switch off. The product will automatically switch off if no operations for 10 minutes.

After selecting the function of the Receiver by pressing the SCAN button, it is no need to press button.

Press SCAN button on the Main Body to select the searching function. Press Hz button to switch to the digital search (L2) mode. In digital search mode, it is not allow to change the searching frequency.

To speed up the searching process, it is recommended to maximize the sensitivity by turning the Sensitivity adjusting wheel. When the target cable is closed, adjust the sensitivity to identify the target cable. To confirm the target cable is the correct cable to be searched, it is recommended to plug the target cable in the RJ45 jack on the Receiver. If all the LED on the Receiver are switch on, the cable connected is the target cable.

Digital Search (Blue LED indicator)

The latest digital searching technology is applied. The Main Body sends out digital signal. By receiving the digital signal passing through the target cable, the Receiver will have sound response (blue indicator switch on) or vibrating (blue indicator flashing).

Analogue Search (Red LED indicator)

To speed up the searching process, it is recommended to maximize the sensitivity by turning the Sensitivity adjusting wheel. When the target cable is closed, adjust the sensitivity to identify the target cable.

MEASURING CABLE LENGTH (LENGTH)

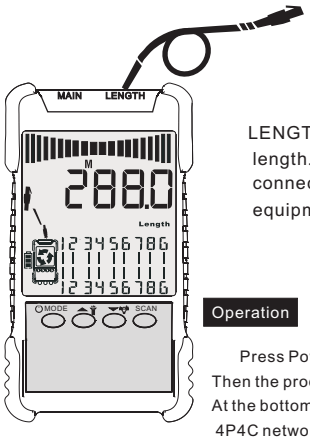
The product is ready for measuring cable length after it is switching on. This function can apply to different metallic cables (with at least 2m) including network cables, phone lines and BNC cable.

To measure length, plug the cable to LENGTH jack. Free the other end of the cable. It is not allowed to connect to any other equipment.

The product may be damaged if the other end of the cable is connected to any powered equipment.

After measuring the length, the product will display the cable conditions. The status of each cable (in the sequence of 1,2,3,4,5,6,7,8) will be displayed. Users can determine the cable is in good conditions or not together with the cable length.

Press ⌒ button to switch to measure the length of each pair of cables (ie. pair of 1 and 2, 3 and 6, 4 and 5. 7 and 8). Press ⌣ button to select the cable type (include 8P8C cables, 4P4C cables, phone lines and BNC cables.



⚠WARNING⚠

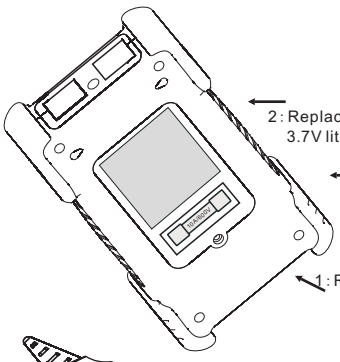
LENGTH jack is designed to measure cable length. The product may be damaged if it is connected to PoE or any other energized equipment.

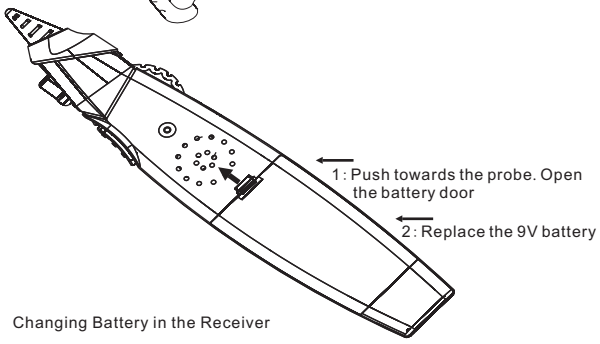
Operation

Press Power button to switch on the product. Then the product is ready for measuring cable length. At the bottom of display, the 8P8C network cable, 4P4C network cable, phone lines and BNC cable.

CHANGING BATTERIES / FUSE

Changing Battery in the Main Body





Changing Battery in the Receiver

SPECIFICATIONS

Basic Functions	other	SP-LT04
Analogue Tracing	√	√
Continuity	√	By Multimeter function
Switch Tracing (w/ PoE)	√	√
Cable Mapping	√	√
Switch indicators flashing	√	√
Noisy Free Digital Tracing	Digital	Digital / Vibration
Voltage Testing	√	By Multimeter function
PoE Voltage Measuring	Voltage / Polarity	Voltage / Polarity
Remote ID Mapping	Optional	Optional
Analogue Bargraph	√	√
NCV Detection	√	√
Other Functions	Main Body flashlight, multimeter input jack indicator, LCD display, white flashlight, analogue tracing sound adjustable, digital tracing sensitivity adjustable, low battery indicator, white backlight, energy saving, tracing distance 3km, analogue tracing signal selectable	
Special Functions		
Multimeter Functions		√
DC Voltage		400mV~1000V±(0.8%+3)
AC Voltage		4V~400V±(1.5%+5)
DC Current		1.0A~10.0A±(1.2%+4)
AC Current		1.0A~10.0A±(2.0%+5)
Resistance		200Ω~20 MΩ±(2%+6)
Continuity		< 50Ω buzzer beeps
Diode		√
Temperature (k-type)		-20~1000°C±(2.0%+15)
Network Cable Length Measure	400M	500M
BNC Cable Length Measure	√	√
Network Cable Short / Open Circuit Test	√	√
Powered by	Main Body : 1250mA/H rechargeable Lithium Battery/Receiver : 9V Battery	
Package	Gift Box / Manual / Carrying Bag / RJ45 Cable / Alligator Clip Cable	Gift Box / Manual / Carrying Bag / RJ45 Cable / Testleads / k-type Temperature Probe

*Remote ID Unit is an optical accessories
*The specification listed above is only the best specifications

LENGTH CALIBRATION (LENGTH & TEMP)

Length Calibration

Due to the conductivity difference of cable made by different materials, the measuring results may not be accurate. To solve the issues, this product allow users to calibrate itself.

Calibration Method

1)After switching on the product, connect a cable with known length to the LENGTH jack on the Main Body. At the cable length measuring mode, pressing ∧ and ∨ buttons together for 3 seconds. The product will be ready at the user calibrating mode. The measuring result will be flashing. User can press ∧ or ∨ buttons to adjust the measuring result until the displaying value is the same as the actual cable length. Then press ∨ and MODE button together to save the calibrating result and leave the user calibrating mode. Press any other buttons will leave the user calibrating mode without saving the result.

2)After switching on the product, pressing ∧ and MODE button together to reset the product to the factory setting.

3)The known length cable for using on calibration should have at least 5M long.

Temperature Calibration

The measuring result may be affected by the temperature difference between the environment and product inside. To solve the issue, the product have temperature calibration mode. Following is the calibrating method.

1) After switching on the product, select the measuring mode, pressing ∧ and ∨ buttons together for 3 seconds. The product will be ready at the temperature calibrating mode. The measuring result will be flashing. User can press ∧ or ∨ buttons to adjust the measuring result until the displaying value is the same as the actual cable length. Then press ∨ and MODE button together to save the calibrating result and leave the user calibrating mode. Press any other buttons will leave the user calibrating mode without saving the result.

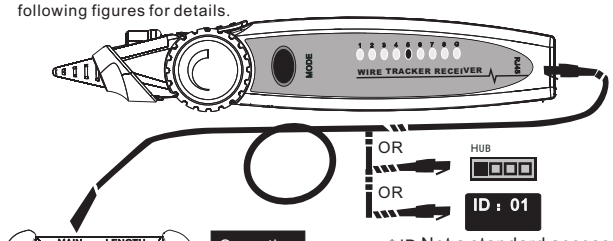
2) After switching on the product, pressing ∧ and MODE button together to reset the product to the factory setting.

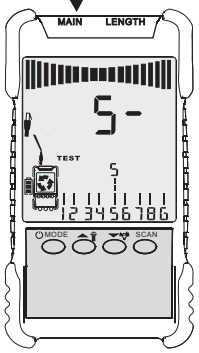
3) During temperature calibrating, please refer to mercury thermometer with resolution at 0.1℃.

CABLE MAPPING (TEST)

By using the cable mapping function, users can check the open circuit and cables' physical connection of the following cables.

1.UTP computer network cables fulfill IEEE 10Base-T, EIA/TIA 568A standard; 2.2 core, 4 core phone lines and other metallic network cables. Plug one end of the cable being tested to the MAIN jack on the Main Body. Press MODE button to switch to the cable mapping mode. Press the other end of the cable to the RJ45 jack on the Receiver. If the indicator on the receiver match with the indicator number showing on th Main Body, the cable being tested is in good condition. Please refer to the following figures for details.





Operation

* ID Not a standard accessory

Press MODE button to switch between Cable Mapping (TEST), switch mapping , checking LED indicators of jacks on switches, and test with remote ID unit.

Plug one end of the cable being test to the MAIN jack on the Main Body. Plug the other end to the related jack.

For testing cable, plug the other end of the cable in the MAIN jack on the Receiver. The Main Body will display the conductor conditions one by one. Press ∧ to select the fast mode. Press ∨ to select the normal mode. For switch mapping, connect the other end of the cable to the switch. The Main Body will display the conductor conditions one by one.

For checking the Switch indicators flashing ( ), connect the other end of the cable to the switch being testing. The indicator of the jack on the switch which is connecting to the Main Body will flash once per second. For testing with the Remote ID Unit, connect the other end of the cable to the Remote ID Unit. The Main Body will show the number of the Remote ID that is connected.

PRODUCT MAINTENANCE

Maintenance

This product is a pre equipment. Please ensure the battery power is good. Follow the instructions, especially to ensure the multimeter input jack is plug in correctly. User is not allowed to change the connection. Otherwise, the product may be damaged and the user may get hurt.

Please follow the instruction to maintain the product:

1.Please keep the product away from water, dust. Do not drop the product.

2.Do not operate the product in flammable, explosive, high temperature, high humidity and/or strong magnetic field environment.

3.Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.

4.Remove the batteries if the product planned to be stored for long period.

5.Please recharge the product as soon as possible after the Low Battery Indicator switch on.

Trouble Shooting and Warning

If the product cannot work properly, please check the battery, fuse or the power switch. Please have the product serviced if the problems cannot be solved.

All information provided is subject to change without prior notice. We tried our best to keep the information most updated and correct. If user find any mistakes, and / or information missing, please contact us or your distributor.

Our company is not responsible for all damages or hurts caused by the incorrect operations.

All the functions mentioned should not be used as a reason for special purposes.

ELECTRICAL CHARACTERISTICS

Auto Power Off

Main Body : Automatically switch off after no function or button press for 20 minutes

Receiver : Automatically switch off after no function or button press for 10 minutes

Current

Main Body : 40~130mA (subject to the functions)

Receiver : ≤100mA

Powered by

Receiver : 9V laminated battery

Main Body : protected 3.7V lithium battery

Cable Tracing Signal Transmission Distance

≥3km

Safety

Save (Probe can be directly contact non-Hi-Voltage metal conductors