

TESTER-RED-7071 LCD Cable Length Toner & Probe Kit user guide

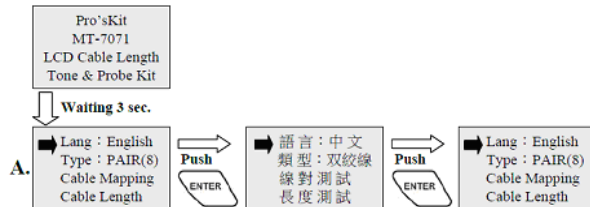
⚠ Caution!

Do not plug in live wire that over 5mA, AC 60V /DC 48V to RJ45 (8 pin) jack, ; Do not test with live wire having over 5mA, AC 125V/DC 100V for RJ11 (6 pin) telephone cable test or BNC (2pin) cable test; Do not connect with mains electricity to any jack of MT-7071, all of mains electricity is over 5mA.

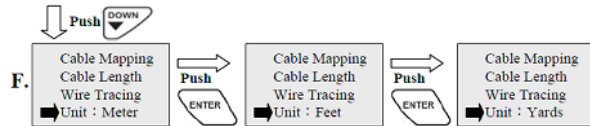
OPERATION

If this is your first operation, please follow the instruction to set Language, Auto power off time and Unit as below

1. Select Language :

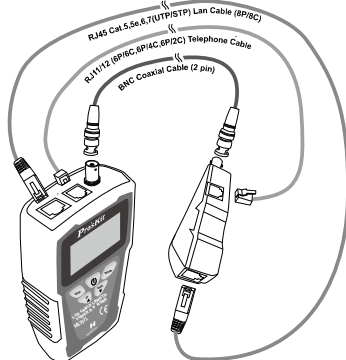


2. Select Unit :

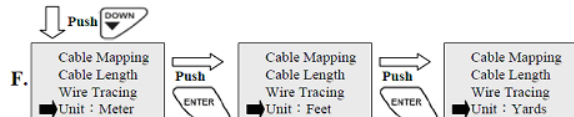


CABLE MAPPING

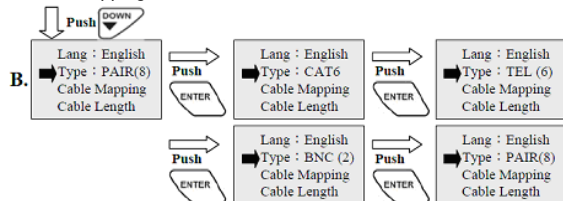
1. Connect cable to transmitter and remote unit.



2. Select cable type you want to test.



3. Cable Mapping Test :

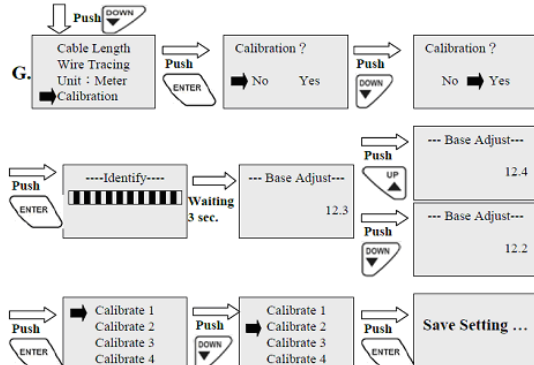


MEASURE LENGTH, LENGTH CALIBRATION AND RECALL PARAMETER

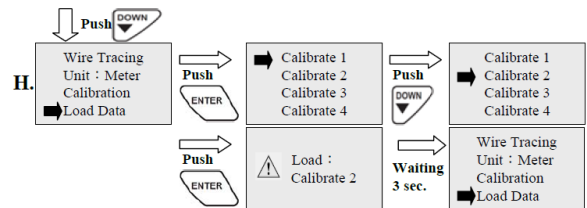
1. Connect cable to transmitter

2. Select cable type you want to test.

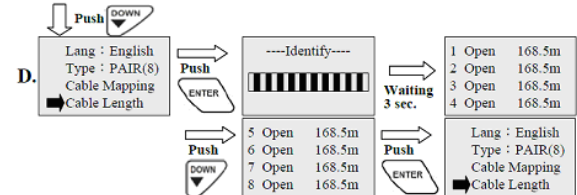
3. Calibration parameters setting



4. Calibration parameters Recall



5. Measure Length



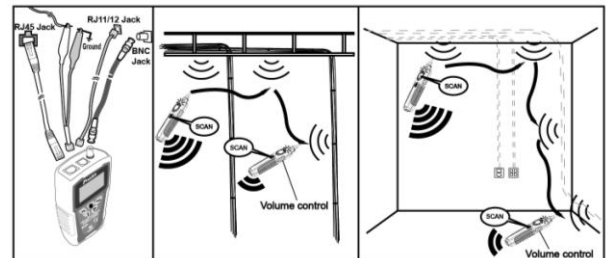
LOCATING AND ISOLATING CABLES

1. Connect cable to transmitter and receiver

1-1. Connect the black alligator clip with grounded wire before isolating.

1-2. Locating Individual wire pairs with the MT-7071 analog function

1-3. Isolating cables :



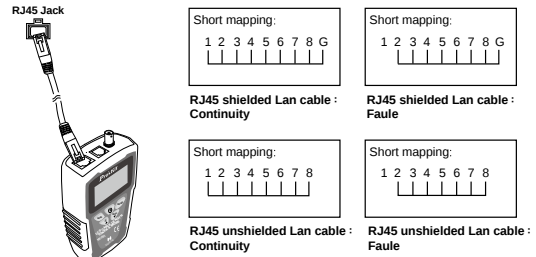
2. Select cable type you want to test.

3. perform the wire tracing function to find out the target cable.



LIVE TELECOMMUNICATION EQUIPMENT AND ROUTER TEST

1. Connect RJ-45 (8P/8C) cable to transmitter and working router.

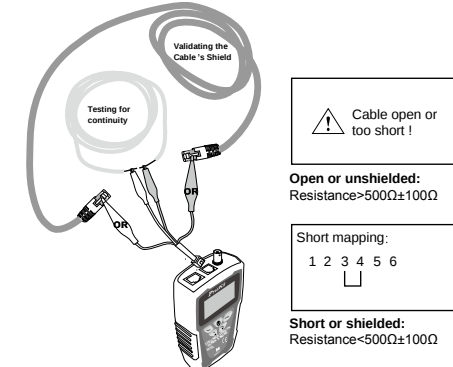


2. Select cable type you want to test.

3. Cable Mapping test.

SHIELDED LAN CABLE & CONTINUITY TEST

1. Plug alligator clip patch cord into RJ11 Jack, and another terminal connect with tested Cable.



2. Select cable type you want to test

3. Cable Mapping test

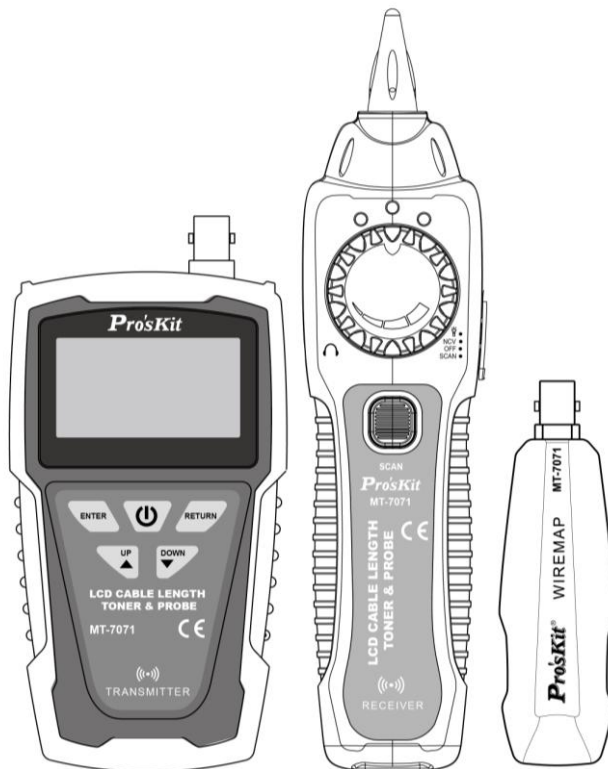
NCV (Non-Contact Voltage) TEST

Turn the switch to "NCV" position, NCV tested function has been started when Power on.

LCD Cable Length Toner & Probe Kit

TESTER-RED-7071

KIT TESTER CABLE DE RED



User's Manual

1st Edition,

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Thank your for purchase **Pro'sKit** MT-7071 LCD Cable Length Toner & Probe Kit. The Toner and Probe set is used to measure cable length and quickly trace and identify cables or wires within a group and also check the operation of telephone lines. With proper use and care, this instrument will provide many years of reliable service.

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OVERVIEW

MT-7071 display is 128x64 dots graphic LCD, 50x27.5mm dimension, with LED backlight allows work even in dark places. Users can select display language in Chinese or English. It employs a cable capacitance method to measure cable length up to 1200M (4000ft) by locating the open point, accuracy is $\pm 3.0\%$ after length calibrating. User can select unit of length in meters, feet or yards.

MT-7071 can save 7 calibration parameters and recall the data to apply it at anytime. It lets you easily locate and verify the cable with the receiver, indicates by low or high signal on LCD or volume of sound to find the cable quickly.

MT-7071 also provides the wiring troubleshooting for continuity, shorts, opens and crossover on RJ45 LAN cable Cat 5、5e、6 (UTP/STP)、RJ11/12 Telephone cable Cat. 3 (2/4/6 pin) and Coaxial cable & normal solid/stranded wire by alligator clips patch cord together with the remote unit. MT-7071 comes with complete accessories to satisfy different application requirements, including RJ45 patch cord、RJ11/12 patch cord、BNC patch cord and Alligator clips patch cord. Ideal for all installation and maintenance fields of telecommunication, networking, data communication, Audio/Video, cable TV, etc.

FEATURES

Cable Length Measurement up to 1200M

- Measuring cable length to opens up to 1200M, Calibration accuracy: $\pm 3.0\%$.
- Length measurement in feet, yards or meters.
- Cable length measurement without remote attached.

Calibration Parameters

- Can determine actual calibration parameters with known length of cable for cable length test.
- Allows setting 1-7 calibration parameters.

Wire Tracing up to 3KM

- The tone and probe kit lets you easily track wire directly in connection with live telecommunication equipment and router.

Cable Mapping & Status Indication

- Display the result of pin to pin cable mapping.
- Display cable status and troubleshoot wiring for continuity, short, open and crossover.

Max. Support 8 remote units

- For cable mapping on RJ45 Lan cable Cat 5、5e、6 (UTP)、RJ11/12 Telephone cable Cat. 3 (2/4/6 pin) & BNC connector coaxial cable.

Non Contact Voltage Detection

- Tests AC voltage from 90 ~ 1000V, special design to make sure the power is off before testing for circuit protection.

Energy saving

- Selectable option automatically powers off after 15/30/60/120 min. of no operation.

ADVANCED FEATURES

- **MT-7071 Transmitter:** comes with 128×64 dots graphic LCD, 50×27.5mm dimension with LED backlight allows work even in dark places. User can select display language in Chinese or English.
- **MT-7071 Transmitter :** measures the cable length or locates the break point of RJ45 Lan cable 、 RJ11/12 phone cable 、 Coaxial cable up to 1200M (4000ft). The minimum testing length is 2meter (6.8 feet/2.2 yard). User can select unit of length in meters, feet or yards, accuracy is $\pm 3.0\%$ after length calibrating. It can save 7 calibration parameters and recall the data to apply it at anytime.
- **MT-7071 Transmitter:** Generates 580/1160 Hz audio signal with two tones. The maximum distance of Transmitter is ≥ 3 kilometers. Work with MT-7071 Receiver by volume adjustment feature can precisely find the break point in the range of 10~30cm. The MT-7071 Receiver with the indicated LEDs is more accurate for testing.
- **MT-7071 Transmitter with the Remote unit:** for cable mapping by LCD indication. The instrument can verify cable status for continuity, shorts, opens and crossover on RJ45 Lan cable and RJ11/12 telephone cable and test shielding/ unshielded wire. The maximum length that can be tested is 610 meters (2,000 feet/666 yards).
- **MT-7071 Transmitter with multi remote units :** It supports testing with multi remote units up to 8 (optional MT-7071U: ID#1~#8) for cable mapping and verifying continuity, shorts, opens and crossover of RJ45Lan cable or RJ11/12 phone cable, Coaxial cable. The maximum length could be tested is 610 meters (2,000 feet/666 yards). LCD can display each ID number to quickly locate and trace the cable that you want to test.
- **MT-7071 Transmitter :** With alligator clips patch cord for verifying the open and short status for single conductor or twin conductor cable and testing the shielded or unshielded wire.
- **MT-7071 Transmitter :** Circuit Protection design for low current $< 5\text{mA}$, 48V DC, allows to test telecommunication equipments and routers in live network, you don't need to turn off power.
- **MT-7071 Transmitter :** User can select 15, 30, 60 or 120 minutes setting the auto power off time and select the low battery indication function.
- **MT-7071 Receiver :** With Non Contact Voltage detection function which can detect AC voltage from 90~1000V to avoid danger and damage by detecting the voltage in advance.
- **MT-7071 Receiver :** With LED lighting and earphone jack allowing to test in noisy or dark environments.

PACKAGING

The MT-7071 comes with the accessories listed below. If any accessory is damaged or missing, contact the place of purchase immediately.

MT-7071 LCD Cable Length Tone and Probe Kit

- MT-7071 Transmitter.
- MT-7071 Receiver.
- MT-7071 Remote unit, max. support 8pcs (optional MT-7071U)
- RJ45 (8 pin) to RJ45 (8 pin) patch cords.
- RJ11 (6 pin) to RJ11 (6 pin) patch cords.
- RJ11 (6 pin) to alligator clips patch cord.
- Earbud.
- Storage bag & User's manual.

SPECIFICATIONS

MT-7071 Transmitter specifications	
Display	LCD 128×64 Dots (50×27.5mm), with white backlight
Compatible connectors	RJ45(8 pin) 、 RJ11/12(6 pin) 、 BNC connectors
Cable types tested	RJ45 Lan cable Cat 5 、 5e 、 6 (UTP/STP) 、 RJ11/12 Telephone cable Cat 3 (2/4/6 pin) 、 Coaxial cable & normal solid/stranded wire by alligator clips patch cord
Cable test modes	580/1160 Hz two-note tones for location and isolating cables, wire mapping for validate (detects wire continuity, shorts, opens, miswire (crossover) and open length tested.
Measurement technology	Cable capacitance method
Max. distance of open length	> 1,200 meter (4,000 feet/1,300 yard), approx
Min. distance of open length	2 meter (6.8 feet/ 2.2 yard)
Typical accuracy of open length	2~10 meter (6.8~33 feet/2.2~11yard) for reference 10~610 meter (33-2000 feet/ 11-666 yard.): ±5.0% 610~1,200 meter (2000~4000feet/ 666~1300 yard.) for reference
Calibration accuracy of open length	10~610 meter (33~2,000 feet/11~666 yard), RJ45 Lan cable Cat 5 、 5e ±3.0%, RJ45 Lan cable Cat6 、 RJ11/12 Telephone cable Cat 3 (2/4/6 pin) 、 Coaxial cable ±5.0%, standard cable:10~50meter(33~164 feet/11~55 yard)
Resolution of open length	0.1 meter/ feet/ yard
Measurement rate	1~3 sec./time
Unit of open length	meters/ feet/ yards, selectable option
Calibrating parameters memory	1~7 sets, allowing rewrite by new calibrating parameters
Tone frequency	580/1160 Hz
Max. distance of transmission	≥ 3 km

Max. distance of cable map	610 meter (2,000 feet/666 yard)
Min. distance of cable map	Twisted Pair : 1Meter (3 feet/ 1yard), normal wire:1.25Meter (4feet/1.35yard)
Max. working current	≤ 65 mA
Max. signal voltage	8 Vp-p (Tone mode) · DC 3.3V/5mA (Cable mapping mode)
Tone mode	two-note tone
Function selection	5 Push button switch (POWER · ENTER · RETURN · UP · DOWN)
Language select	Chinese/ English
Continuity test	Yes (With alligator clips patch cord, display #3 & #4 short or open)
Cable map indication	LCD #1~#8
Shielded indication	LCD #G
Live telecommunication equipment test and router test	Yes
Voltage protection	Protection for low current < 5 mA. RJ45(8 pin) : 48V DC RJ11(3.4 pin) & BNC(2 pin) : 48V DC
Auto power off	15/30/60/120 min., selectable option
Low battery display	DC7.0±0.5V (LCD flashes)
Battery type	DC 9.0V (NEDA 1604/ 6F22 DC9V ×1pcs) Not included
Dimension (L×W×D)	138×80×35 mm
MT-7071 Receiver specifications	
Frequency	580/1160 Hz
The Max. working current	≤ 80 mA
Compatible connectors	RJ45(8 pin), only for RJ45 cable mapping
Function selection	4 Position mode switch (LED · NCV · OFF · SCAN)
Earbud	1
Signal status indication	1 LED & Buzzer
NCV indication	1 LED (AC 90~1000V)
LED illumination	1 LED
Power indication	1 LED
Battery type	DC 9.0V (NEDA 1604/ 6F22 DC9V ×1pcs) Not included
Dimension (L×W×D)	203×50×32 mm
MT-7071 Remote unit specifications	
Remote unit	1 pcs, max. support to 8 pcs (optional MT-7071U)
Compatible connectors	RJ45(8 pin) · RJ11/12(6 pin) · BNC connectors
Dimension (L×W×D)	90×32×30mm

Transmitter drop test (Shock and Vibration) : 1 Meter
 Operating temperature : 0 ~ 50°C (32 ~ 122°F)
 Storage temperature : -10 ~ 60°C (14 ~ 140°F)
 Operating humidity : 20% - 75% RH
 Storage humidity : 10% - 90% RH
 Operating altitude : 3,000 meters
 Storage altitude : 10,000 meters

SAFETY INFORMATION

Table 1 describes the international electrical symbols used on the tester and in this manual.

Table 1. International Electrical Symbols

	Warning : Risk of personal injury. See explanations in the manual. Caution : Risk of damage or destruction to equipment or software. See explanations in the manual.
	Warning : Risk of electric shock.
	Please keep an eye on the status or function of the equipment while operating.
	This equipment not for connection to public communications networks, such as active telephone systems.



Warning

- Do not test with live wire having over 5mA, 48V DC for RJ-45 Lan cable test; Do not test with live wire having over 5mA, 48V DC for RJ11 (6 pin) telephone cable test or BNC (2pin) cable test; Do not connect with mains electricity to any jack of MT-7071, all of mains electricity is over 5mA.
- Never use the Transmitter, Receiver, or test leads if they are damaged. Inspect the cases and test leads for damage before use.
- Disconnect unused test leads and connectors from the Transmitter when testing telephone circuits.
- Never open the case except to change the battery; no user-serviceable

parts are inside.

- Turn off the Transmitter or Receiver and disconnect all test leads before replacing the battery.
- Use only a 9V battery, properly installed in the case, to operate the Transmitter and Receiver.
- If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

INSTRUCTION

MT-7071 Transmitter/Remote Unit :

1. **RJ45 (8 pin) connectors:** Used for cable mapping and verifying cable status of RJ45 (8 pin) LAN cable with remote unit; with tone generator for wire tracing; for measuring cable length to open without remote unit.



Caution! Do not plug in live wire that over 5mA, 48V DC to RJ45 (8 pin) jack.

2. **RJ11(6 pin) Connectors :** Used for cable mapping and verifying cable status of RJ11 (6P/6C/4C/2C) phone cable with remote unit; with tone generator for wire tracing; for measuring cable length to open without remote unit. Use alligator clip patch cord for cable mapping, cable length measuring and verifying cable status of single conductor cable or two conductor cable.



Caution! Do not plug in live wire having over 5mA, 48V DC to RJ11 (6 pin) jack.

3. **BNC Connectors :** Used for cable mapping and verifying cable status of BNC Coax cable with remote unite; with tone generator for wire tracing; for measuring cable length to open without remote unit. Use adaptor for testing RF cable (such as F 、 RCA 、 TNC 、 M connectors).



Caution! Do not plug in live wire having over 5mA, 48V DC to BNC (2pin) connector.

4. **LCD Display :** For indicating function and display test result.

5. **Battery low indicator:** When the battery is lower than DC 7.0V, LCD will show flash 「」 icon. Please replace battery.
6. 「」 **Function enter push button :** Press this button to enter the function.
7. 「」 **Function up push button :** Press this button to move up arrow cursor on LCD to choose function or increase 0.1 meters / feet / yards of calibration parameters.
8. 「」 **Power ON/OFF push button :** Press this button to power on, push again for power off.
9. 「」 **Function return push button :** Press this button to return to previous menu.
10. 「」 **Function down push button :** Press this button to move down arrow cursor on LCD to choose function or reduce 0.1 meters / feet / yards of calibration parameters.
11. **Battery cover.**

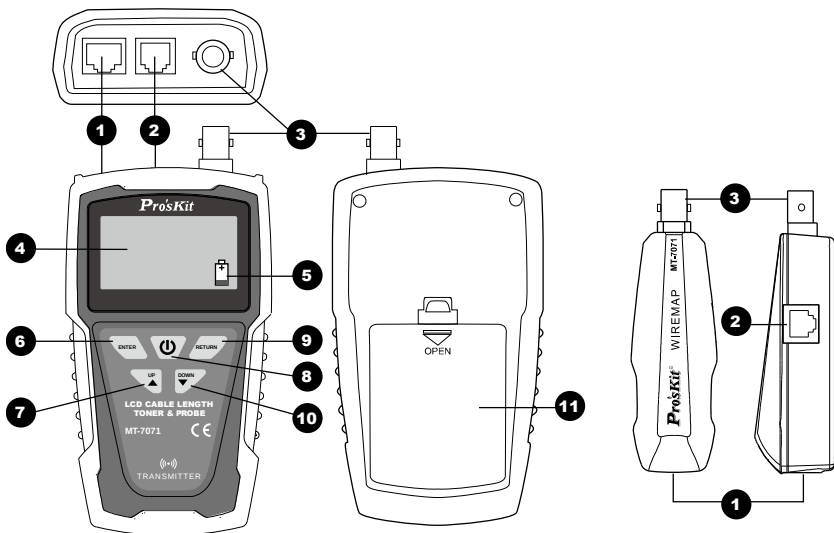


Figure 1 MT-7071 Transmitter / Remote Unit

MT-7071 Receiver :

1. **Probe** : Used for wire tracing and NCV detection.
2. **LED illumination** : Used for dark working environment.
3. **Power ON/OFF indicator** : The indicator will be lit up when the switch is at "  "or "NCV" or "SCAN" position and the receiver has started its functions.
4. **NCV indicator** : When the probe is close to the tested object to detect the voltage, the indicator will light up if the object carried AC90~1000V. If the indicator did not light up, there is no voltage detected from the object or the AC voltage is less than 90V.
5. **Signal status indicator** : When doing cable mapping by probe, if the indication LEDs (1~8) more light up, the signal is stronger.
6. **Volume control** : By adjusting the volume from high to low to adjust the sensitivity of probe, move the position of receiver from 30 to 10cm to find out which cable you are tracing.
7. **Earphone jack Φ3.5mm** : Earphone can be used when the working area is noisy.
8. **Function selection : 4 Position mode switch (LED、NCV、OFF、SCAN)**
9. **Speaker** : When "SCAN" feature is working, if the speaker is louder, the signal is stronger.
10.  **Locating and Isolating cables function push button** : When pushing the "  " button, the feature starts and the signal status indicator light will be on.
11. **RJ45(8 pin) connectors** : Used Only for RJ45 (8 pin) Lan cable mapping. When used for RJ45 (8 pin) LAN cable mapping and wire troubleshooting, please connect the cable terminal to RJ45 (8 pin) jack of MT-7071 Transmitter, then start the function. (only for 1 to 1 test)



Caution! Do not plug in any live wire to the RJ45 (8 pin) jack.

12. **Battery cover.**

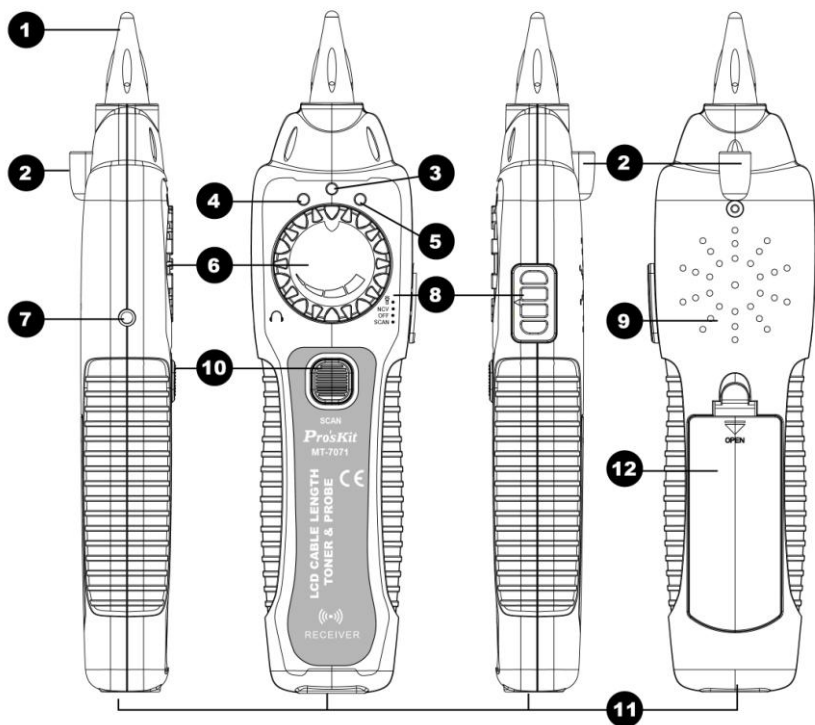


Figure 2 MT-7071 Receiver Diagram

OPERATION

FIRST USE GUIDE

If this is your first operation, please follow the instructions carefully as below before testing.

1. Please read user manual carefully and refer to page30: 「Operating process chart」 for learning operation instruction.
2. Please refer to page30: 「Operating process chart **A. (Lang :)**」 and follow the procedures to select language: (Chinese/English).
3. Please refer to page30: 「Operating process chart **I.(Auto off time)**」, follow the procedures to select 15/30/60/120 min for auto power off time setting.
4. Please refer to page30: 「Operating process chart **F.(Unit :)**」, follow the procedures to select unit : Meter / Feet /Yard.
5. If you would like to change the setting, please follow the above instruction to reset.

CABLE MAPPING



Caution!

- When performing cable mapping, select standard 1 to 1 or optional 1 to 8 remotes; both of receiver and remote unit cannot be used at the same time, otherwise, the LCD will show incorrect test result. Single conductor cable cannot be used for cable mapping.
- When performing cable mapping, do not connect the tested cable to any electric circuit、equipment or adapter, it will affect the test result.
- Measuring cable length: the length of Lan cable must be longer than 1m (3 Ft / 1 Yard), and the others must be longer than 1.25m (4 Ft / 1.35 Yard) . Maximum measuring distance is 610m (2,000Ft / 666 Yards).
- If short, open and crossover status occur at same time, “short” will show up in first priority, please make the wire troubleshooting step by step.

Cable mapping with standard remote unit



Caution!

- When performing cable mapping with standard remote unit, it will indicate shielded or unshielded, but will not indicate ID number of remote unit. The remote unit does not have buzzer alarm.
 - When performing cable mapping with standard remote unit for RJ11/RJ12 cable, 6P/6C、6P/4C、6P/2C, the test result and continuity status will be shown as figure 4-1.
1. Please connect tested cable to transmitter and remote unit properly as figure 3.
 2. Please refer to page30 「**Operating process chart B. Type :)**」 to select the corrected cable type (such as coaxial cable, telephone cable...).
 3. Start to performing cable mapping test as page30 「**Operating process chart C. Cable Mapping**」.
 4. The test result of 1 to 1 remote unit will display on LCD, please refer to figure 4-2.

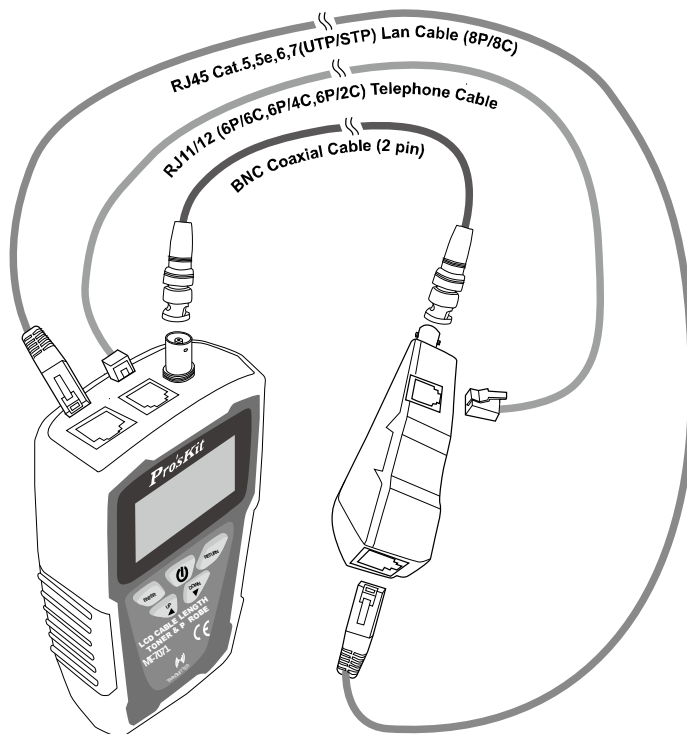


Figure 3 Validating Cable Maps

	Telephone Cable (6P/6C)	Telephone Cable (6P/4C)	Telephone Cable (6P/2C)
Good	Cable Map : Remote M: 1 2 3 4 5 6 R: 1 2 3 4 5 6	Cable Map : Remote M: X 2 3 4 5 X R: X 2 3 4 5 X	Cable Map : Remote M: X X 3 4 X X R: X X 3 4 X X

Figure 4-1 Telephone Cable 6P/6C 、 6P/4C 、 6P/2C

Cable Mapping with standard remote unit

	RJ45 Lan Cable (8+1 pin) 1-8、G	Cat. 6 Lan Cable (8+1 pin) 1-8、G	Telephone Cable (6P/6C) 1-6	BNC Coaxial Cable (2 pin) 1、G
Good	Cable Map : Remote M: 1 2 3 4 5 6 7 8 G R: 1 2 3 4 5 6 7 8 G	Cable Map : Remote M: 1 2 3 4 5 6 7 8 G R: 1 2 3 4 5 6 7 8 G	Cable Map : Remote M: 1 2 3 4 5 6 R: 1 2 3 4 5 6	Cable Map : Remote M: 1 G R: 1 G
3 Opens	Cable Map : Remote M: 1 2 X 4 5 6 7 8 G R: 1 2 X 4 5 6 7 8 G	Cable Map : Remote M: 1 2 X 4 5 6 7 8 G R: 1 2 X 4 5 6 7 8 G	Cable Map : Remote M: 1 2 X 4 5 6 R: 1 2 X 4 5 6	1 or G Opens  Cable open or too short !
3、4 Crossed pairs	Cable Map : Remote M: 1 2 3 4 5 6 7 8 G X R: 1 2 3 4 5 6 7 8 G	Cable Map : Remote M: 1 2 3 4 5 6 7 8 G X R: 1 2 3 4 5 6 7 8 G	Cable Map : Remote M: 1 2 3 4 5 6 X R: 1 2 3 4 5 6	
3、4 Crossed pairs & 5、6 Opens	Cable Map : Remote M: 1 2 3 4 X X 7 8 G X R: 1 2 3 4 X X 7 8 G	Cable Map : Remote M: 1 2 3 4 X X 7 8 G X R: 1 2 3 4 X X 7 8 G	Cable Map : Remote M: 1 2 3 4 X X X R: 1 2 3 4 X X	
3、4 Shorts	Short mapping: 1 2 3 4 5 6 7 8 G 	Short mapping: 1 2 3 4 5 6 7 8 G 	Short mapping: 1 2 3 4 5 6 	Short 1 G 

Figure 4-2 the test result instruction for cable mapping

with standard remote unit

Cable mapping with multi remotes (ID#1~#8)(MT-7071K)



Caution!

- When performing cable map with multi remotes (ID#1~#8), it will indicate ID number of remote unit, but not show up shielded or unshielded wire. The remote unit does not have buzzer alarm.
- When performing cable map with multi remotes (ID#1~#8), the test result of connector pins are the pairs defined by this standard as below:
Lan cable: #1pin & #2pin 、 #3pin & #6pin 、 #4pin & #5pin 、 #7pin & #8pin
Phone cable #1pin & #6pin 、 #2pin & #5pin 、 #3pin & #4pin.

In the test result of verifying cable status and wire troubleshooting with multi remotes (ID#1~#8), when Lan cable #1pin circuit is open, it will show #1pin & #2pin open. When the telephone cable #1pin circuit is open, the result will show #1pin & #6pin open. If users want to know more pin to pin detail of cable status, we recommend you change to perform cable mapping for 1 to 1 standard remote unit, please refer to chapter “**Cable mapping with standard remote unit**”.

- When performing 1 to 8 remote unit (ID#1~#8) cable mapping, if LCD displays two pairs #3pin & #6pin 、 #4pin & #5pin interaction flashing, it means cross over between #3pin & #6pin 、 #4pinpin (not comply with EIA/TIA568A/B standard) or the patch cord is too short .
 - Performing 1 to 8 remote unit (ID#1~#8) cable mapping for RJ11/RJ12 6P/6C,6P/4C,6P/2C telephone cable, the result instruction as shown as figure 5-1.
1. Please connect tested cable to transmitter and remote unit properly as shown in figure 3.
 2. Please refer to page30 「**Operating process chart B. Type :)**」 to select the corrected cable type (such as coaxial cable, telephone cable...).
 3. Start to perform cable mapping test as page30 「**Operating process chart C. Cable Mapping**」 .
 4. The test result of cable map with multi remote units will display on LCD, please refer to figure 5-2.
 5. When performing cable mapping with multi remotes (ID#1~#8) for Lan cable, phone cable (6P6C), we use ID#6 as a example, if cable status is “good connection”, the remote unit will sound five of beeps; If the cable status is “open”, the remote unit will sound beeps continuity; if status is “short” no more beep sounded. The test result instruction, please refer to figure 5-2.



Caution!

- When performing 1 to 8 cable map (ID#1~#8 remote units), if any “short” in Lan cable exists, #7pin or #8pin, telephone cable #1pin or #6pin, telephone cable 6P/4C or 6P/2C or coax cable, it will not provide a reminder.

	Telephone Cable (6P/6C)	Telephone Cable (6P/4C)	Telephone Cable (6P/2C)
Good	Cable Map : Remote 6 M: 1 2 3 4 5 6 R: 1 2 3 4 5 6	Cable Map : Remote 6 M: X 2 3 4 5 X R: X 2 3 4 5 X	Cable Map : Remote 6 M: X X 3 4 X X R: X X 3 4 X X

Figure 5-1 Telephone Cable 6P/6C 、 6P/4C 、 6P/2C

Cable Mapping with multi remote units

Cable Map with multi remote units ID#1~ID#8

	RJ45 Lan Cable (8 pin) 1~8	Cat. 6 Lan Cable (8 pin) 1~8	Telephone Cable (6P/6C) 1~6	BNC Coaxial Cable (2 pin) 1、G
Good	Cable Map : Remot 6 M: 1 2 3 4 5 6 7 8 R: 1 2 3 4 5 6 7 8	Cable Map : Remot 6 M: 1 2 3 4 5 6 7 8 R: 1 2 3 4 5 6 7 8	Cable Map : Remot 6 M: 1 2 3 4 5 6 R: 1 2 3 4 5 6	Cable Map : Remot 6 M: 1 G R: 1 G
3 Opens	Cable Map : Remot 6 M: 1 2 X 4 5 X 7 8 R: 1 2 X 4 5 X 7 8	Cable Map : Remot 6 M: 1 2 X 4 5 X 7 8 R: 1 2 X 4 5 X 7 8	Cable Map : Remot 6 M: 1 2 X X 5 6 R: 1 2 X X 5 6	1 or G Opens Cable open or too short!
3、4 Crossed pairs	Cable Map : Remot 6 M: 1 2 3 4 5 6 7 8 X R: 1 2 3 4 5 6 7 8	Cable Map : Remot 6 M: 1 2 3 4 5 6 7 8 X R: 1 2 3 4 5 6 7 8	Cable Map : Remot 6 M: 1 2 3 4 5 6 X R: 1 2 3 4 5 6	
3、4 Crossed pairs & 5、6 Opens	Cable Map : Remot 6 M: 1 2 X X X X 7 8 R: 1 2 X X X X 7 8	Cable Map : Remot 6 M: 1 2 X X X X 7 8 R: 1 2 X X X X 7 8	Cable Map : Remot 6 M: X X 3 4 X X X R: X X 3 4 X X	
3、4 Shorts	Short mapping: 1 2 3 4 5 6 7 8 	Short mapping: 1 2 3 4 5 6 7 8 	Short mapping: 1 2 3 4 5 6 	Short Short mapping: 1 G

Figure 5-2 the test result instruction for cable mapping with multi remote unit (ID#1~#8)

MEASURE LENGTH, LENGTH CALIBRATION AND RECALL PARAMETER



Caution!

- Please do not connect to any equipment or terminator, when measuring cable length or performing length calibration, the cable should be in open status. The measured cable should be 2 conductors at least, it is not suit for single conductor wire. The cable length used for calibration parameter should be 10m to 50m (33~164 Ft /11~55 Yard).
- When performing cable length measurement, the cable should be in open status, it cannot apply for continuity 、 short or crossover testing cable. The length of cable should be 2m (6.8 Ft / 2.2 Yard) ◦ and the Maximum measuring distance is 1200m (4,000Ft/3000Yard).
- When performing cable length measurement or length calibration, in order to ensure the measuring accuracy, please operates under the ambient temperature $23\pm5^{\circ}\text{C}$, RH 20%~75%. Otherwise, it may cause big measurement error.
- Since there are many different cable specifications, brands and manufacturers in the market, for ensuring correct measurement, please set the cable calibration parameter as reference in advance. Before measuring cable length, please reload the calibration parameter you set and then measure the cable length. It will cause big measuring distance difference if without calibration parameter. MT-7071 default measuring cable type is UTP (Cat.5e) 、 category 6 (Cat 6) 、 phone cable (HYV4*1/0.4BC) and Coax cable(RG59).
- If user couldn't judge what type the measuring cable is, please use a high accuracy resistor meter to measure the wire resistance of same length cable and judge the cable type according comparing the resistance.
- When performing cable mapping, do not connect the tested cable to any electric circuit 、 equipment or adapter, it will affect the test result.
- When performing cable length measurement function, LAN cable is based on #3pin, telephone cable is based on #4pin, coax cable is based on G pin. If the test results of measuring cable length to opens are different, please refer to the length of based-pin. If the based-pin is open, please change the wiring sequence; make sure the wire of based-pin is good, then re-measures the cable length to opens.
- When performing cable length measurement function, if the test result is shown “short” on the LCD, please remove the fault, then re-measures the cable length to opens.

Length calibration

1. Prepare a 10m~50m (33~164Ft/ 11~55Yard) long standard cable to measure.
2. Connect MT-7071 and standard cable as figure 6.
3. Select unit if you want to change, please refer to page30 「Operating process chart **F.(Unit :)**」.
4. Select correct cable type as instruction (page30) of 「Operating process chart **B.(Type :)**」. Then start to measure length calibration function.
5. Performing length calibration, please refer to page30「Operating process chart **G.(Calibration)**」, follow the steps and save the measuring result as 「Calibration 1, Calibration2... Calibration 7」 after calibration.



ATTENTION : When calibration saved, you should bring up the calibration parameters and check the length is same as the standard cable, if different, please double check the wiring is properly connected, then measuring cable length again, save the result as calibration.

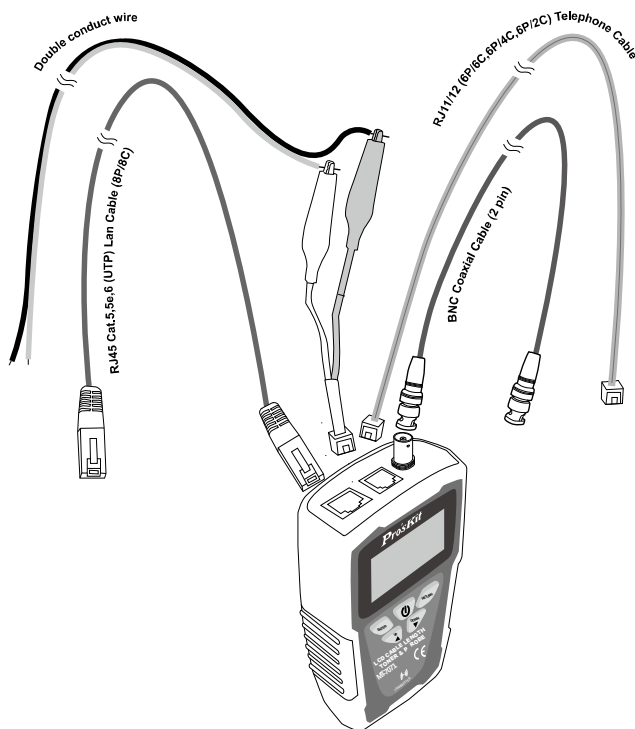


Figure 6 Cable Length Calibrations and Measurement

Calibration parameters Recall

Please refer to page30 「Operating process chart **H.(Load Data)**」 to select 「Calibration 1~ Calibration 7」 then load the data for testing.

Measure Cable length

1. Make sure the measuring cable is in open circuit.
2. Measure length after recall calibration parameters, follow steps as below.



Caution!

- Since there are many different cable specifications, brands and manufacturers in the market, for ensuring correct measurement, please set the cable calibration parameter as reference in advance. Before measuring cable length, please recall the calibration parameter you set and then measure cable length.
3. Connect MT-7071 and standard cable as figure 6.
 4. Select unit if you want to change, please refer to page30 「Operating process chart **F.(Unit :)**」.
 5. Select correct cable type as instruction of 「Operating process chart **B.(Type :)**」. Then start to measure length calibration function.
 6. Select 「Calibration 1~ Calibration 7」, **please** refer to page30「Operating process chart **H.(Load Data)**」, follow the step and apply data for testing.
 7. Measure length as page30 「Operating process chart **D.(Cable Length)**」.
 8. If all of measuring results are same distances between testing points to open points, please refer the instruction as figure 7

Test results for when all conductors are same length to opens. For example as below, all of measuring results are 168.5m.

RJ45 Lan Cable (8 pin) 8 pin same distances to open	Cat.6 Lan Cable (8 pin) 8 pin same distances to open	Telephone Cable (6 pin) 6 pin same distances to open
1 Open 168.5m 2 Open 168.5m 3 Open 168.5m 4 Open 168.5m	1 Open 168.5m 2 Open 168.5m 3 Open 168.5m 4 Open 168.5m	1 Open 168.5m 2 Open 168.5m 3 Open 168.5m 4 Open 168.5m
5 Open 168.5m 6 Open 168.5m 7 Open 168.5m 8 Open 168.5m	5 Open 168.5m 6 Open 168.5m 7 Open 168.5m 8 Open 168.5m	5 Open 168.5m 6 Open 168.5m
BNC Coaxial Cable (2 pin) 2 pin same distances to open	Double conductor wire(2 pin) 2 pin same distances to open	
1 Open 168.5m 2 Open 168.5m	1 Open 168.5m 2 Open 168.5m	

Figure 7 Test result for measuring Cable length to opens are the same

LOCATING AND ISOLATING CABLES

Using MT-7071 LCD Cable Length Toner & Probe kit to locate and isolate cables by 580/1160 Hz analog, also trace twisted wires (UTP, STP, Cat 5e, Cat 6) and telephone line (Cat 3) and Coaxial cable. Use an alligator clip patch cord to connect RJ45 / RJ11 jack for testing general cable and various blocks.



Caution

- To locate and isolate cables using the 580/1160 Hz analog toning mode, please avoid interference sources like electronic devices with adapter, induction coil, and motors nearby. White noise from MT-7071 Receiver is normal when your transmitter is near any of the interference. If you cannot locate the signal on 2-conductor cables, the cable may be shorted. Please move away from the interference sources or turn off the electronic devices.
- To locate and trace cables which connected with PBX system or networking HUB, the signal of PBX system or HUB may cause a conflict with the signal of MT-7071 to disable the locate and trace function, please turn off the electronic devices and then test again.
- The position on the MT-7071 Transmitter and Receiver lets you use the Receiver to trace by an analog 580/1160 Hz tone. When using the Receiver to isolate the tone source in the cable bundle or at the patch panel, the signal might be interfered with or decreased and the signal will not pass through metal tubes.
- It is not necessary to touch the Receiver's tip to the cabling or patch panel when searching for the Transmitter's signal.
- Make sure the black alligator clip of the Transmitter is connecting to the ground before use.

Locating Individual Wire Pairs with the MT-7071 Analog Function

To locate cables, do the following steps (Figure 8) :

1. Please connect tested cable with MT-7071 properly, as figure 8. If you want to test single conductor / twin conductor cable , please select 「Tel」 cable type then plug the alligator clip patch cord into RJ11 jack.
2. Please refer to page30 「Operating process chart **B.(Type :)**」 , to select cable type that you want to test.
3. Please refer to page30「Operating process chart **E.**」 , perform the wire tracing function to find out the target cable.
4. As figure 8 shows, slide the "switch" of receiver to SCAN or LED position, then push **SCAN** on receiver to operate cable tracing function. The tracing sound will be output from speaker. When put on earphone, there will be no sound from speaker, but from the earphone.
5. Use the Receiver to find the general location of the tone at a cable rack, patch panel, or behind a wall. In locating mode, the Receiver's LEDs light up in red from 1 to 8, then wrap back and light up from 1 to 8 again as the signal strength increases.
6. Adjust the Volume Control on the Receiver to locate the wire pairs from 10cm to 30cm.

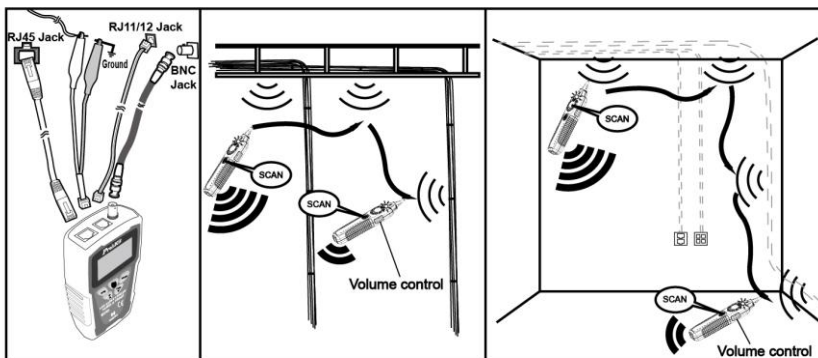


Figure 8 Locating cables

Isolating Cables

To isolate the tone source in the cable bundle or at the patch panel, do the steps as described in the previous section of “Locating Cables”.

7. Divide the wires into two parts, and separate the two bundle wire in 30~45 centimeter, use MT-7071 receiver to scan each part, which part get the louder buzzer sound and the LED light is more bright (Stronger signal), that part should include the target wire, do the same way to check until find out the target wire.
8. Adjust the volume control from high to low to enable looking for a more difficult to identify wire. Narrowing the length from 30 to 10 centimeters will help to more accurately identify the wire pairs.
9. Repeat the steps of 6 and 7 to isolate the bundled cables.



Caution

- If user could not distinguish the signal strength at each part, perhaps the cable status is short or open, perform Continuity Test (refer to figure 11) to check the cable status.

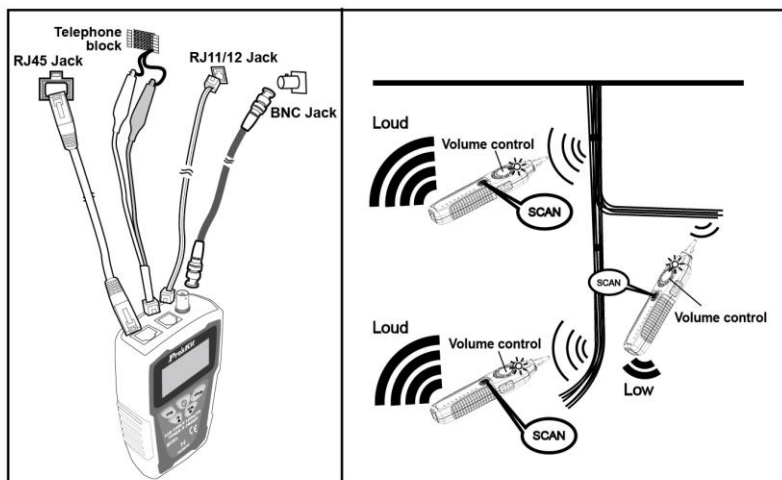


Figure 9 Isolating Cable

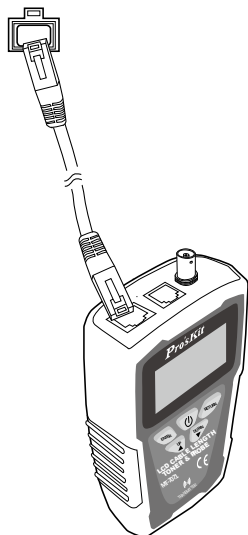
LIVE TELECOMMUNICATION EQUIPMENT AND ROUTER TEST



Caution !

- The feature can only be used for testing cable continuity and opens, cannot be used for cross over and short.
 - When test on live networking equipments or routers, due to some brands of HUB have the different circuit design, only can display 1 · 2 · 3 · 6 short °
1. According to Figure 10, connect MT-7071 transmitter and working router by RJ45 (8P/8C).
 2. Select cable type, please refer to page30 「Operating process chart **B.(Type :)**」
 3. Perform cable mapping, please refer to page30 「Operating process chart **C.(Cable Mapping)**」
 4. The test result will be shown as figure 10.
 5. If test result shows “Short mapping” with wires 1~8 and G that indicates wires 1~8 and G are continuity. If test result shows no wire is continuity that means wire is fault.

RJ45 Jack



Short mapping:

1 2 3 4 5 6 7 8 G

RJ45 shielded Lan cable :
Continuity

Short mapping:

1 2 3 4 5 6 7 8 G

RJ45 shielded Lan cable :
Faule

Short mapping:

1 2 3 4 5 6 7 8

RJ45 unshielded Lan cable :
Continuity

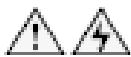
Short mapping:

1 2 3 4 5 6 7 8

RJ45 unshielded Lan cable :
Faule

Figure 10 Cable testing on working line

SHIELDED LAN CABLE & CONTINUITY TEST



DANGER : Before testing, please make sure the power of receiver is

OFF.

If you want to confirm the cable is shielded or unshielded, or is continuity or open, please follow the step as below:

1. Refer to figure 11, plug alligator clip patch cord into RJ11 jack, and another terminal connect with tested cable.
2. Select cable type, please refer to page30 「Operating process chart **B.(Type :)**」 to select cable type (TEL)
3. Perform cable mapping, please follow the steps as page30 「Operating process chart **C.(Cable Mapping)**」 .
4. The test result is as figure 11.
5. If the tested result shows “Short mapping” with wire 3 and 4 that indicates wire status is continuity ($\text{resistance} < 500\Omega \pm 100\Omega$). If the tested result shows “Cable Open or too short!” indicates the wire is open circuit or poor connectivity or shielding bad ($\text{resistance} > 500\Omega \pm 100\Omega$).

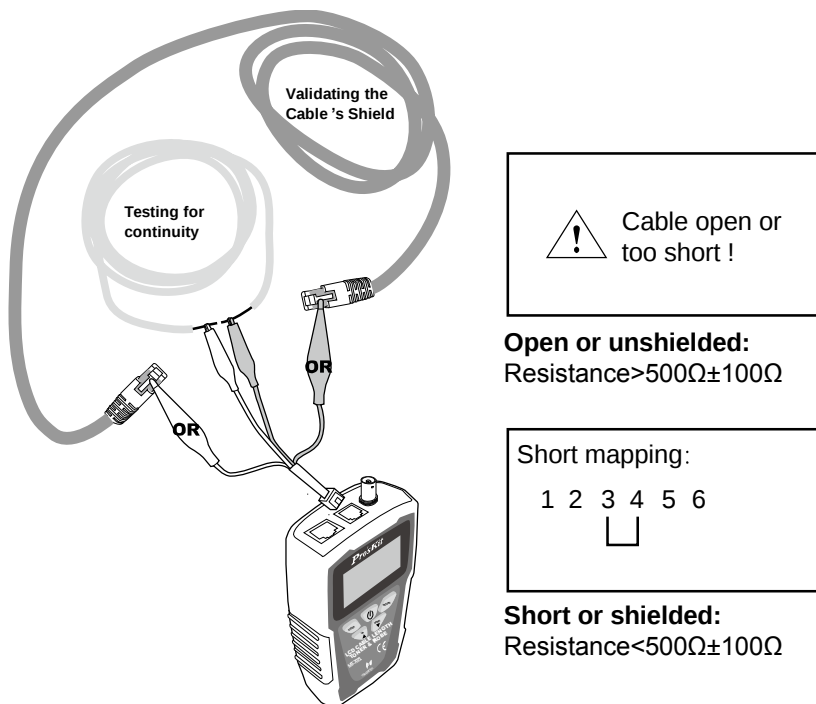


Figure 11 Shielded LAN Cable & Continuity Test

NCV (Non-Contact Voltage) TEST



Caution

- The feature can be used before locating, isolating, cable mapping to identify if the tested cable has AC voltage present. It cannot only help to ensure the safety of user and avoid possible electric shock or personal injury, but also protect the product from being damaged by AC power.
1. Per Figure 12, turn the switch to “NCV”, the function is started when the power indication is on.
 2. When doing the NCV testing by approaching the probe of MT-7071 receiver to the tested cable, the NCV indicator twinkled fast and the buzzer sounded means the tested objective has AC 90~1000V. If the indicator did not go on and no buzzer is sounded, it means the tested objective has AC power less than 90V or there is no AC power on it.

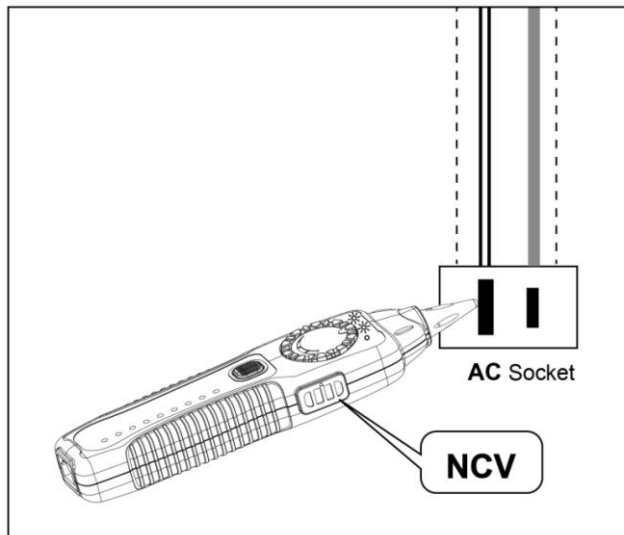


Figure 12 Non-Contact Voltage Testing

BATTERY LIFE AND REPLACEMENT



Caution

- To avoid unreliable test results, replace the battery as soon as the low battery indication appears.



Warning

- To avoid possible electric shock or personal injury, turn off the Transmitter or Receiver and disconnect all test leads before replacing the battery.

To avoid unreliable test results, replace the battery as soon as the low battery indication appears.

Battery Status: Low battery Icon 「」 is flashing, it indicates transmitter voltage is lower than DC 7.0 V, please replace the battery.

To replace the battery, do the following (Fig 13):

1. Turn off the Transmitter or Receiver and disconnect all test leads before replacing the battery.
2. Properly install in the case to power the Transmitter and Receiver.
3. Use only a 9V (6FF22) battery.

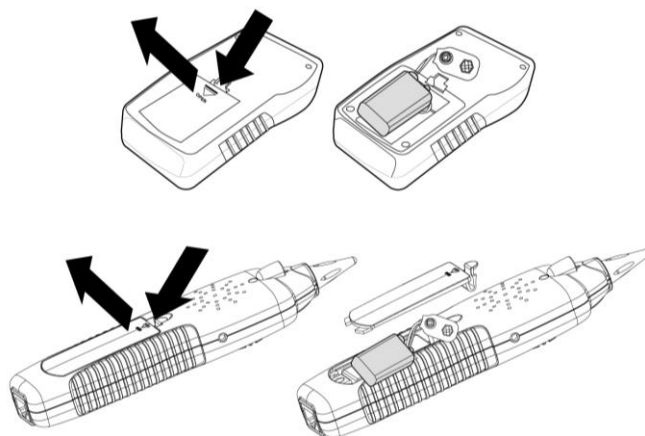


Figure 13 Replacement of the Battery

MAINTENANCE & TROUBLE SHOOTING



Warning

- Turn off the Transmitter or Receiver and disconnect all test leads before replacing the battery.



Caution

- To avoid damaging the case, do not use solvents or abrasive cleansers.

Clean the case with a soft cloth dampened with water or a mild soap solution.

Trouble shooting

Possible Problems	Trouble shooting
The signal from Transmitter can not be detected by receiver	1. Shortage of battery power: Check the battery on both Transmitter and receiver. If the battery voltage is less than 7.0V, please replace new battery.
	2. Make sure the switch position on receiver is "SCAN" or "LED". The SCAN function will not work if the switch is at "NCV" position.
	3. Device damaged: please return the product to the place you purchased the product for maintenance.
No signal received from Transmitter on Live telecommunication device testing	There might be conflict between the signal from telephone office and the signal from Transmitter. Please turn off the telephone exchange device.
Incorrect cable mapping result	LCD display broken: please return the product to the place you purchased the product for maintenance.
	Improper connection of networking or telephone cables: please reconnect the cables to RJ45 or RJ11 individual jacks.
Others	Device damaged: please return the product to the place you purchased the product for maintenance.

OPERATING PROCESS DIAGRAM

Operating Process

