Your excellent helper in cable test!

NF-8601S

Your excellent helper in cable test!

# INSTRUCTION MANUAL

ORIGINAL AUTHENTIC
Patented products, Counterfeiting not allowed

VER:V4

**Read the precautions before your operation.**

- Power supply for device is 3.7V rechargeable lithium battery.
- Disconnect the 5V 1A Charger when complete charging in fear of danger.
- Please use battery according to the specification; otherwise, it may result in damage to equipment.
- Never put the equipment in the place with much dust, humidity and high temperature (over 40℃).
- Please never dismount the equipment arbitrarily. The maintain -ance and care shall be conducted by professional personnel.
- Users can set the auto-off time according to his own needs.
- Please take out the battery in launcher and receiver if the equipment is not used for a long time so as to prevent that the battery liquid is leaked in future.
- Never use the equipment to detect power cord with electricity (such as power supply circuit of 220V), otherwise, it may result in damage to equipment and personal injury.
- Never conduct related operation of communication line in thunderstorm weather so as to prevent lightning stroke and Impact on personal safety.



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Your excellent helper in cable test!

## Overview

NF-8601S, upgrated based on NF-8601, provides full cable testing on different category network, coax, or telephone cable. The intelligent wiremap' feature tests for length, shorts, split pairs, or opens and displays with an intuitive graphical interface where a fault is located. (usingTDR techonology:Time Domain Reflectometry). Besides, finding cables easier and tracing with AC fliter, or locating network port using hub blink feature. It can also test the presence of PoE and PING functions. all these make it a must tool for each network technician.

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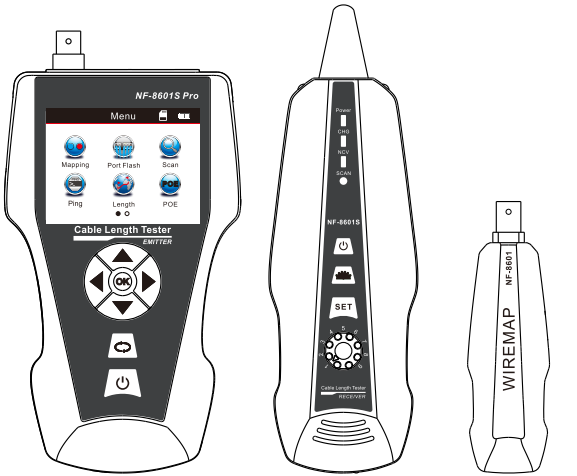



Main tester Receiver Remote identifier

## Main functions

- PING Testing.
- Detect PoE presence and how much the voltage is.
- Hub blink for locating network port by the flashing port light on Hub/Switch.
- Wiremap with length, testing open, short, cross, reverse, display the fault distance.
- TDR theory to measure cable length and provide distance to fault information.
- To perform split pair test on network cable to solve the potential problem of slow speed.
- To quickly find the targeted cable without AC noise.
- Two scan modes: ordinary switch/PoE switch.

## Benefits

- Receiver can also be used to detect AC Voltage presence.
- Import and export data from comupter (50 sets, txt format).
- Rechargable Lithium battery for long-time work.
- Adjustable auto-off time, lamp for work in dark.

## Technical parameters

(1). Overall dimensions
Main tester: 173X92X34mm; Receiver: 183X58X35mm
Remote identifier: 106X32X30mm.

(2). Display
2.8 inch LCD Color screen:320X240 (Effective visible area 60X45mm).

(3). Power supply
3.7V rechargeable lithium battery1800mAh

(4). Tracing cable types
STP/UTP Cat5e, cat6, cat6a, cat7 network cable, telephone cable, coaxial cable,and common metal wires connected with alligator clip.

(5). Testing cable types
STP/UTP Cat5e, cat6, cat6a, cat7 network cable, telephone cable, coaxial cable,and common metal wires connected with alligator clip.

(6). Operating environment temperature/humidity
-10℃ ~ +60℃ /20% ~ 70%;

(7). Testing device interface
Main unit: RJ45 (M), RJ45 (S), PoE/PING, RJ11, BNC ports,
Remote identifier: RJ45, RJ11, BNC ports.
(8). Length measurement
Range: 1-1500m;
Calibration precision: 2% (+/-0.5m, or +/-1.5 feet); (calibration; cable>50m) measurement precision: 3% (+/-0.5m, or +/-1.5 feet);
Display unit: meter, feet, yards.
(9). Length calibration
User can set a length value at a known length, and then use the calibrated data. (the cable should be 20m at least, but a cable ⩾50m is recommended)
(10). Cable wiremapping
Open, short, reverse , cross, split pair, etc.
(12). PoE/PING Testing
(13). Tracing cable
Locate targeted cable among lots of cables.
(14). Automatic power-off
Users can choose time to turn off the tester automatically.

## Product interface and key introduction

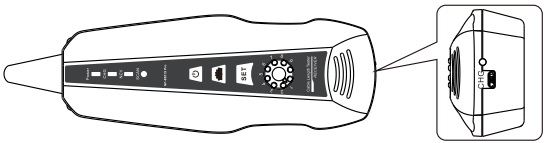
### Ports on Main unit

(1). Three RJ 45 ports on the main unit:
One of them is “MAIN” port, used for cable length measuring and continuity testing. and another one is “SCAN” interface , used for cable tracing only; The other one is “PoE/Ping” interface, used for PoE and PING Testing.
(2) Port RJ11: used for tracing cable, cable length and continuity testing for telephone cable .
(3) Port BNC: used for tracing cable, cable length and continuity testing for coaxial cable.
(4) Micro USB: Charging for battery.
(5) TF card: Store and export datas (txt format / 50sets can be stored).

Main tester

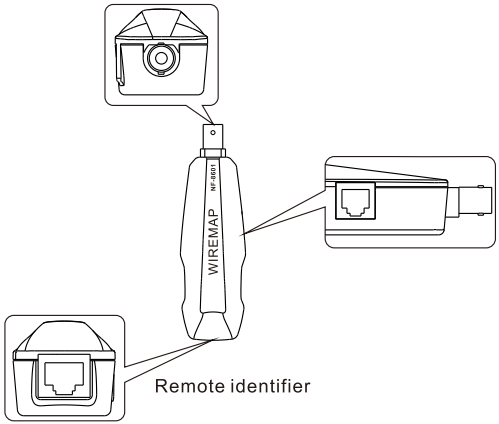
### Function keys on Receiver

is used to detect currency and also for lamp. “SET” can be shifted to two work modes: cable tracing and AC voltage detecting. Press to adjust the sensitivity. Press to turn on or turn off the device.


Receiver

## Ports on Remote identifier

(1)Port RJ45:testing cable continuity for Lan cable.
(2)Port RJ11:testing cable continuity for telephone cable.
(3)Port BNC: testing cable continuity for COAX cable.




## Charging function

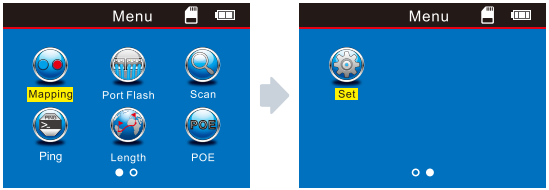
The power supply for main tester and receiver are both 3.7V Rechargeable battery, its capacity is 1800mAh.
After charging, please disconnect the charging device, otherwise it would shorten the battery life.
When the emitter low battery(＜3V), it will show “Low battery, auto-off soon! ”; when the reciever low battery(＜3V), “power” will flash.

## Here are seven main functions on Main interface.

(1).Mapping --- Test cable continuity, such as the cable is good, open, short, cross, reverse connection, etc.
(2) Port flash---locate network cable visually by the flashing port light on Hub / Switch.
(3) Scan--- find the targeted cable among unknown cables, also roughly locate short position by tone.
(4) PING---to test network performance, data packet, min & max time.
(5) Length--- measure cable length and also display cable errors' distance.
(6) PoE--- identify which pins are providing power and also detect how much voltage.
(7).Set---Set up backlight/ backlight time/ auto-off time/ export record/ delete record/system information (version No.),ect.

## Operation steps

Boot screen
Turn on the tester to come to home page.




Users can set up the systems according to his own needs and to have next operations.

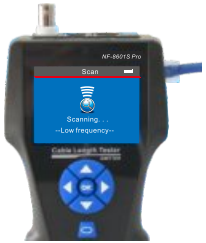
## Testing methods

(1) M-R Methods---Checking cable continuity with main tester and remote unit, for Lan cable, telephone cable, coax cable. ( Graph No.1)

Note: M-R Methods is for cable continuity testing, not for cable length measuring.

Graph No.1

(2) Scan method---“ RJ45 Scan”“RJ11”“ BNC” ports are used to trace corresponding cables. ( Graph No.2)




Graph No.2

(3) Open Method--- Only connect one end of cable into main tester when measuring cable length, disconnect the far end of the cable. ( Graph No.3)

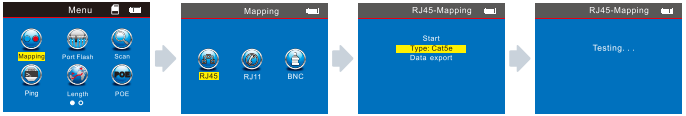
Graph No.3

(4) PoE/ PING Methods--- Connect one end of lan cable with “POE/Ping” Port, the other end to PoE switcher or router. ( Graph No.4)

Graph No.4

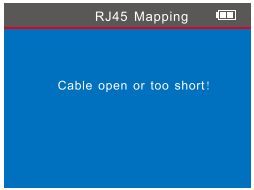
## a.Cable pin-to-pin test ( eg: Network cable):

Turn on the device, connect one end of the network cable to “RJ45 Main”, the other end to “RJ45” port of remote unit. Choose “Mapping” ➡“RJ45” ➡ “Type” to choose the correct cable type (cat5e, cat6, cat6a, cat7) to start , the testing result will display on the screen directly. If needed, users can also store the data into TF card.



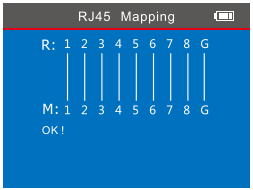

**Test result 1: No connection or the cable doesn't connect well**

If the cable doesn't connect to the main tester, or not connect well, or the cable is too short, the screen will display as below.



**Test result 2: correct connection**

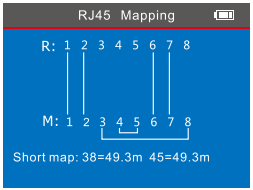
If to test a shielded lan cable with remote identifier, and the cable is good connection, the result is as below graph:



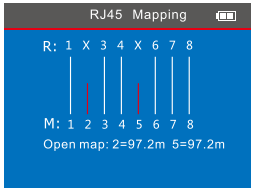

R = Short for “Remote idenfifier”
M= Short for “Main tester”
G= Short for “Ground”,the shield layer for STP cable

**Test result 3: Short circuit**

If there is short circuit , it will show as below(Shorted at pin 38 & pin 45)



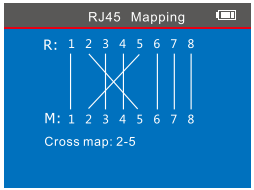

**Test result 4: open circuit ( testing with Remote unit)**




In the figure, it indicates there is open circuit in Pin “2” and “5”,at the distance of 97.2m from the starting end of “Remote” .

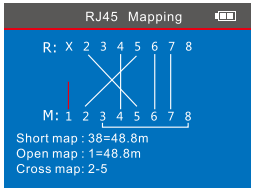
**Test result 5: Cross**

When the cable is cross , it will show you as below.



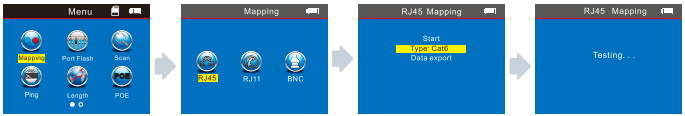

**Test result 6: Short , Open , Cross**

If the cable exsits short , open and cross together , will show you this result : ( #3 and #8 is short , #1 open , #2and #5 is cross )




**Test result 7: Continuity test for Cat6, Cat6a, Cat7.**

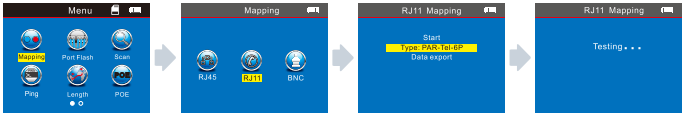
It's the same operation step as Cat5e, just choose the exact cable type before testing.



**Test result 8: Continuity test for telephone cable**

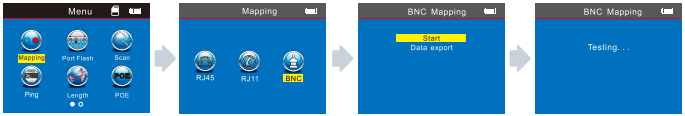
Insert one end of the telephone cable into the RJ11 port of Main unit, the other end to RJ11 port of Remote unit. Choose “Mapping”➡ “RJ11”➡ “Type” to choose the correct cable type (TP-Tel-6P, TP-Tel-4P, PAR-Tel-2P, PAR-TEL-4P,PAR-Tel-6P) to start testing.

Note: TP is short for Twisted pair, PAR is short for Parallel.




**Test result 9: Continuity test for coax cable**

When you test the coax cable , you should insert into the BNC interface and the test method is the similar with network cable.

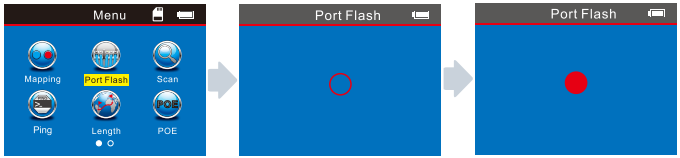



**Attention:**

The cable continuity testing is for ⩾2-core cables .

## b. Port flash testing: (only for good network cable scanning)

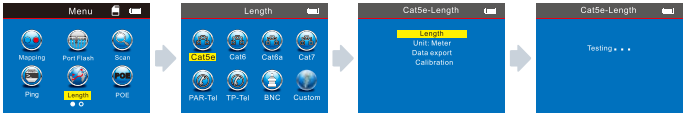
After entering main menu, choose “port flash” function, it will show ○ on the screen. Insert the lan cable into “POE/PING” Port to start. then the hollow circle○ will turn into ● in a frequency . besides, on the other side, the switch port which the targeted cable connects to will also flash in the same frequency, but different with other ports. It helps users to find the target cable on switch much easier and visually. The image is as below:




## c.Cable length test:( eg: Network cable)

Measure length by TDR theory, working by injecting signal into the cable and measuring the time for any signal to be reflected back after encountering changes in impedance caused by cable damage, open and short circuits. The recorded time is then translated into an accurate distance measurement. TDR helps to pinpoint where cabling faults occur. This speeds up fault finding as well as minimising disruption and potential damage to fixtures and fixings.

Here we are to measure a network cable length, enter menu and follow the steps as the below images do.




**They are 4 menus for your option:**

1.Length---start to test cable length.

2.Unit---can set up Meter , Feet , yards.

3.Data upload---to export the data of the tested cable length.

4.Calibration---to calibrate different types of cables.

**Attention 1 :** Connect the Main RJ45 port, not SCAN RJ45 Port ( S) when you test the cable length .

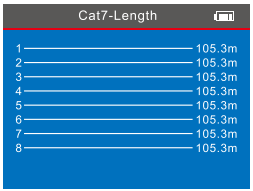
**Attention 2 :** Due to different technical parameters with different branded cables, users are recommended to use dynamic calibration function of the equipment before measuring length (Refer to the related chapter for more details.).

**Attention 3 :** If there is much difference in length for every pin, pls take the data for pin 3 as a standard reference for the network cable.the data pin 4 for the telephone cable ; the data pin 2 for the BNC cable.

**Attention 4:**the device is only used to test more than 2-core cables’ length (2-core included), not available for single-core cable.

## Test result 1: Lan cable---good condition

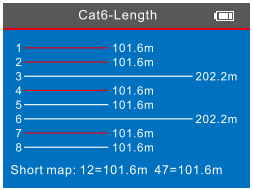
The normal network cable length test result show you as below:




From the image you can see the total length is 105.3m, press back to the main menu and then enter the next testing.

## Test result 2 : Lan cable---Short circuit

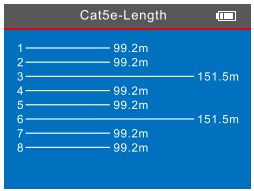
If there is short circuit in the cable , eg: Shorted pin1 &2, pin 4&7.




The total length is 202.2m, but it also means that here is a short location at 101.6m at pin 1 & 2, pin 4 &7.(Note: The lines for shorted pin would be red)

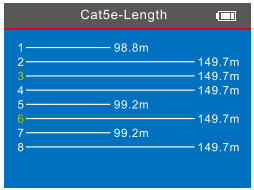
## Test result 3 : Lan cable--Broken

If there is breakage in the cable, measure length without remote unit.
The result is as shown in the below image.



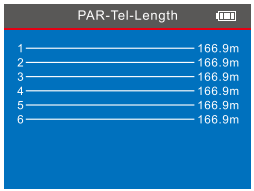



If measure length again with remote unit, then the result will be as below. Since the cable is twisted pair, it is not a sure thing that the cable is broken in PAIR or only in PIN. in this case, users can connect the other end of cable with remote unit to measure cable length again. Then you will know which exact pins are broken as below. (Note: #3 & #6 is green, which means pair 36 is totally good.)




## Test result 4 : Telephone cable--good condition

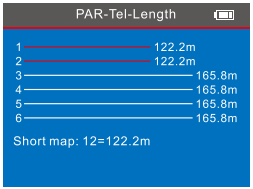
eg: PAR-Tel 6P cable for testing.
When test Telephone cable length ,connect one end of cable to port“RJ11"
Enter “Length” to choose PAR-Tel or TP-Tel according to your cable type, then choose cable type: 6P (2P / 4P/6P for option), after this, choose “Length” to start testing.




From the image , you can see the cable length is 166.9m .

## Test result 5: Telephone cable ---short circuit

If there is short circuit in the cable , eg: Shorted pin1 &2.

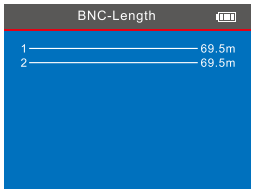



The total length is 165.8m, but it also means that here is a short location at 122.2m at pin 1 & 2.(Note: The lines for shorted pin would be red)

For twisted pair telephone cable, if there is broken in the cable, and it is not a sure thing that the cable is broken in PAIR or only in PIN. in this case, users can connect the other end of cable with remote unit to measure cable length. Then you will know which exact pins are broken like **Test result 3** mentioned .

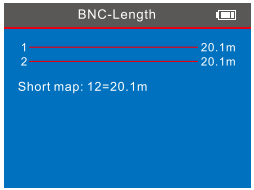
## Test result 6: Coax cable---good condition

When test BNC cable length ,connect one end of cable to port"BNC" Choose "Length" ➡ "BNC" ➡ "Length" to start testing.




This result show you the cable length is 69.5m , press ↩ back to main menu and enter other testing.

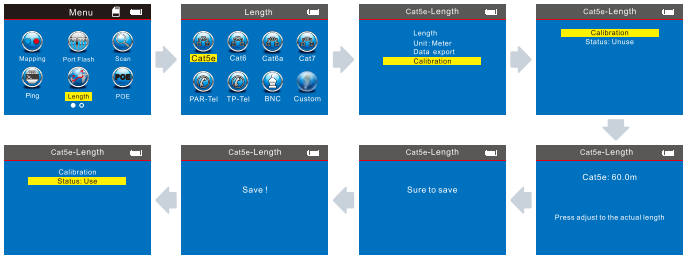
## Test result 7 : Coax cable ---short circuit




This result show you the cable length is shorted at 20.1m.

## Calibration: eg: Network cable

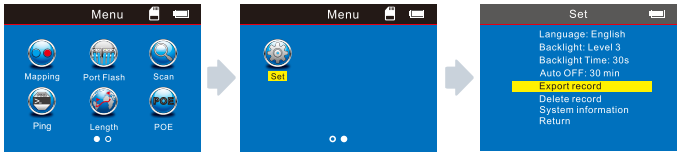
Due to different technical parameters with different branded cables, users are recommended to use dynamic calibration function of the equipment before measuring length (Refer to the related chapter for more details). Connect a network cable to "RJ45 MAIN" port, (the cable should be more than 50m). choose "Length"---"Cat5e/cat6/cat6a/cat7"---"Calibration" to start to adjust the length value, press ▲ to add , ▼ to reduce the value, when adjust the value into actual length value, press OK to save the data. The details is as below.



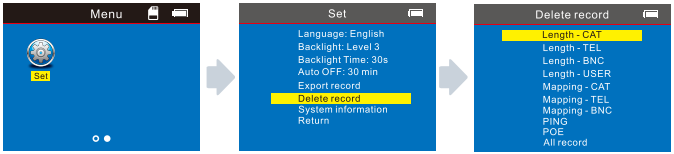

After calibration, choose the statu: use. then users will measure the same type of cable according to the calibration data, if the calibration status is "unuse", then it is measured according to factory calibration data.

## Data export or delete

Users can export data to TF card in each function menu or in SET menu.
In function menu, users can only export the testing data in this function.
If the testing data of all functions needed to be export to TF Card, come to "SET"--"Export record".

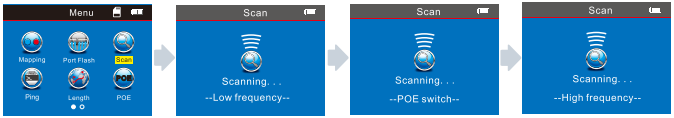



If need to delete the record, come to "SET"---"Delete record". users can choose to delete the data for each function or delete all the record.




### d. Cable scanning

The advanced version NF-8601S, it has three modes for option. (Low frequency, PoE switch, High frequency)
Firstly, choose icon "SCAN" on the main menu (Graph 1), enter to a default scan mode, which is "low frequency" mode (Graph 2). Press "Up\Down" button to switch scan modes to "PoE switch " (Graph 3) or "High frequency" (Graph 4) mode according to your working environments.




Graph 1 Graph 2 Graph 3 Graph 4

Caution:
1. The scan mode in the tranmistter and receiver must be same, If the modes are not matched correctly, even the receiver touch the correct cable, it won't generate tone, either. (How to match the mode accordingly, see the following part of "usage of receiver")
2. Users must choose "PoE switch" mode if scan cables connected to PoE switch.

## Usage of Receiver

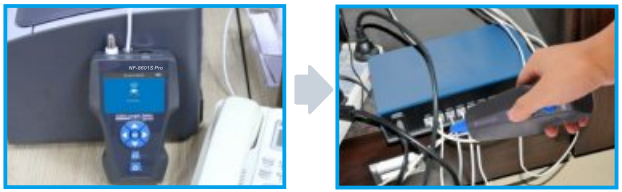
Press ⏻ to turn on the receiver, the "power" indicator is lit on, which means it works normally.
"SET" button is for choosing scan modes or voltage detecting.
a) Short press "SET" one time, the " SCAN" indicator will turn red, in this situation, it is available for two scan modes: Low frequency / PoE switch. It means, when the "scan" indicator is red, users must choose " Low frequency" or "PoE switch" mode in the transmitter.

b) Short press "SET" two times, the " SCAN" indicator will turn purple, in this situation, it is only available for "High frequency " mode. It means, when the "scan" indicator is purple, users must choose " High frequency" mode in the transmitter.

c) Long press "SET" for 2-3 secs, the "NCV" indicator will turn red, in this situation, the receiver can be used as a voltage detector.

button on the receiver used to control lighting and detect currency;
button is sensitivity control when you find the cables.
The receiver charge : when connected the receiver charge , The light will shining near the MICRO , and the same time , the charge Indicator light will flashing , after full of power , this light will always lit.

**1. Tracing Telephone /Lan cable which is connected to switch or router.**
Insert the cable into port "RJ11"/ "RJ45 Scan", enter "SCAN" menu to choose "Low frequency" mode . Then turn on the receiver, press "SET" button one time until the "SCAN" indicator turn red, then go to the other side to trace the target cable.
(Note: telephone cable into "RJ11" port, Lan cable into "RJ45 Scan" port)

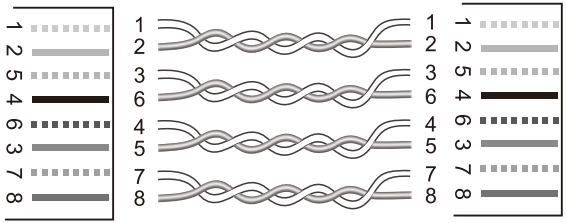


**2. Tracing Coax cable**

Insert the cable into port “BNC”, enter “SCAN” menu to choose “Low frequency” mode . Then turn on the receiver, press “SET” button one time until the “SCAN” indicator turn red, then go to the other side to trace the target cable.

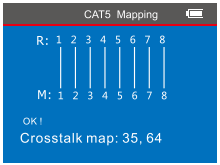
## e. Split pair testing

Refer to the below image, it means Pair 3 6 & Pair 4 5 is split pair(crosstalk). when to test such cable, the split pair will flash. Actually, such cable is still a good cable, but it would influence the network speed.




Connection diagram of split pair

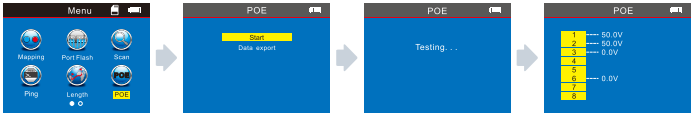
Pin 35 & Pin46 flicks in the image.



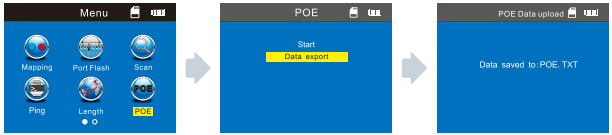

Note: telephone is not twisted pair cable, but if the interference is excessive, sometimes, it will also display split pair.

## f. POE test

After enter the main menu , press this cursor to move ▲▼◀▶, and point to POE test menu , and press OK to test POE; Take one side insert the “POE/Ping “ PORT , the other side insert into POE Router or Ethernet , then start testing , and press OK , the screen will show you the voltage of each pin.

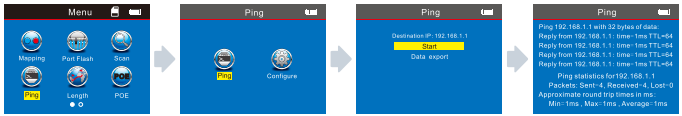



If you want to save the tested result, you can choose data export into the TF card, the picture show you as below:

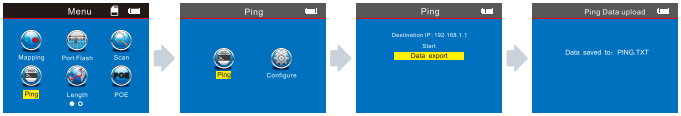



## g. PING test:

After enter the main menu , press this cursor to move ▲▼◀▶ to “Ping” test , and press OK to test Ping; Take one side insert the “PING “ PORT , the other end connect to router or switcher , then start testing,the screen will show you the test result as below.



If you want to save the tested result, you can choose data export into the TF card and choose “PING.TXT”, the picture show you as below:




**Parameter specification of PING functions**

IP address: can obtain automatically any Internet device which has connected in the global. (Under a specific situation, users need to manually set IP address when can't be automatically obtain IP address.)

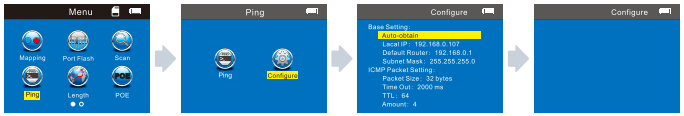
Local IP address:It can be set up,but it must be different with other LAN devices.

Default gateway / Router: In the local LAN Router or gateway IP address.

Subnet mask: In the local LAN Subnet mask.

Remark :Default gateway or Router or Subnet mask can be found by the same LAN internet; Default gateway/ router/ Subnet mask can be found by computer in the same LAN Internet. The method : Start—Run—input “ CMD”, start up the command programme, then input “ipconfig” to check out.

Data packet: can be set based on needs.




**Usage :**

1. LAN communication testing

Set the destination IP to the IP of any computer in the same Lan, this method can check whether the communication is normal in the Lan.

2. Extranet communication testing

Set the destination IP address to any IP of extranet, such as 180.97.33.108 (Baidu), this method can test whether the communication is normal between intranet and extranet.

**Instruction of test results:**

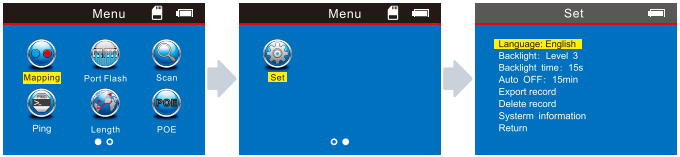
The host will send 4 sets of 32-byte data packet to target device for each testing.

Time: it is the round trip time for the communication from the host to target device, which can identify whether the communication is steady. When it is 1ms, which means it is very steady.

TTL: it is the number of routers or gateways which the 27. communication goes through. When go through each router or gateway, the TTL No. will reduce one, which can indicate the Network's topology structure. When TTL=64, it indicates the host and target device connects directly, without any router or gateway.

## h. System set:

When moving cursor “▲ ▼ ◀ ▶” to “Setup” item, press “OK” key . Move the cursor “▲ ▼ ”to the relative test . The following interface will be shown:




1. Backlight: set up the backlight brightness among level 1, 2 and 3.
2. Backlight time:adjust the backlight time among15s, 30s,1min.
3. Auto OFF: adjust the auto-off time among 15min, 30min, 1h, 2h, or OFF .
4. Export record: export the data which you saved before into TF Card.
5. Delete record: Delete the data saved before.

(when you insert TF Card, icon will display at the top-left corner of the screen, if not, the data won't be exported into TF Card.)

## Accessories

| | | | |
|---|---|---|---|
| Transmitter | 1pc | Alligator cilip | 1pc |
| Receiver | 1pc | User manual | 1pc |
| Remote | 1pc | Carry case | 1pc |
| RJ11 Cable adaptor | 1pc | Gift box | 1pc |
| RJ45 Cable adaptor | 1pc | Charging adaptors | 1pc |
| TF memory card | 1pc | | |

## Diagram of series products

NF-868

NF-268

NF-8200

NF-806B

NF-800

NF-816

NF-468L

NF-820

NF-2100

NF-706

NF-905

NF-911