

Your wiring expert

NF-868

Multipurpose LCD Display Cable Test & Inspection Instrument

INSTRUCTION MANUAL





**Please read and learn safety instructions
before use or maintain the equipment**

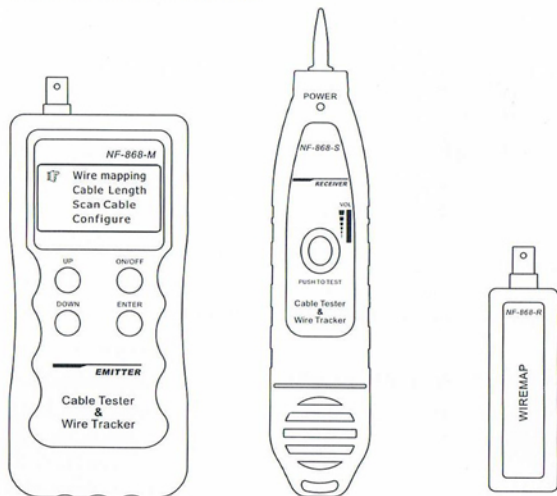
- The tester uses 9V battery for power supply .
- Never put the equipment in the place with much dust, humidity and high temperature (over 40°C).
- Please use battery according to the specification; otherwise, it may result in damage to equipment.
- Please never dismount the equipment arbitrarily. The maintenance and care shall be conducted by professional personnel.
- The tester will shut off automatically if it does not work for 15 minutes in succession.
- 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), other wise, 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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Overview

NF-868 type multipurpose communication cable tester & tracker is a cable tester and tracker with more functions newly developed by our company. The equipment is composed of three parts: main tester (NF-868-M), receiver (NF-868-S) and remote identifier (NF-868-R). The new equipment enjoys a smooth design, good feel and humanity design. It has couples of circuit state testing functions including length test, cable line finding, line-to-line, crosstalk and breaking point and features fast and accurate, and thus serves as a practical tool for low voltage system installation and maintenance technicians of communication circuits and comprehensive wiring circuits. It is widely used in the fields like telephone system, computer networks and other metal lead circuits.



Main tester (NF-868-M) Receiver (NF-868-S) Remote identifier (NF-868-R)

Main function characteristics

- Capable to test open circuit, short circuit, cross connection, reverse connection and pairing connection and broken wire positioning for telephone cable, BNC cable and USB cable with M-S and M-R method, and to visually display on LCD;
- To perform crosstalk test on network cable for solving the potential problem of slow speed;
- To quickly find the target wire or cable among the plenty of network cables, telephone cables, coaxial lines and other various kinds of wires;
- Capable to measure length of network cable, coaxial cable, telephone cable and USB cable with three method (M-S, M-R and OPEN), capable to measure the cable at length of 1500m, and precision of measuring cable length and position of broken line is up to 98%;
- To make a accurate determination of open circuit position (left, right or middle);
- To perform cable tacking on exchanger or Router with power-on;
- Low voltage prompt function is available in case of over low voltage on the main unit;
- Featuring simple control, large screen display and open-and-shut test result;
- Automatic delay power on-off and backlight function;
- Lighting lamp enables to use in a dark environment;
- Remote identifier is not necessary to perform length measurement and pairing test;
- Self-test function shall automatically make compensation due to change of battery level and ambient temperature;
- Single chip software watchdog design runs reliably.

Technical parameters

(1). Overall dimensions

Main tester: 185X80X32mm; Receiver: 218X46X29mm

Remote identifier: 107X30X24mm;

(2). Display

Dot matrix 128X64 (Effective visible area 56X40mm);

(3). Power supply

Main tester: 9V compound tandem cell;

receiver: 9V compound tandem cell;

(4). Testing cable types

STP/UTP 5E, 6E network cable, telephone cable, coaxial cable USB signal cable and common metal wires connected with alligator clip;

(5). Detecting cable types

STP/UTP 5E, 6E network cable, telephone cable, coaxial cable USB signal cable and common metal wires connected with alligator clip;

(6). Operating environment temperature/humidity

-10°C ~ +60°C /20% ~ 70%;

(7). Testing device interface

Main unit: RJ45 (M), RJ45 (S), loop interface, RJ11, BNC connector, USB B-type female interface;

Remote identifier: RJ45, RJ11, BNC connector, USB A-type female interface;

(8). Length measurement

Range: 1-1200m;

Calibration precision: 2% (+/-0.5m, or +/-1.5 feet); (calibration; cable >10m) measurement precision: 3% (+/-0.5m, or +/-1.5 feet); (AMP, CAT5E, 6E cable material)

Display unit: meter, inch, yard;

(9). Length calibration

User may use a cable at a known length to set a calibration coefficient, and the calibration length is over 10m;

(10). Line sequence and cable failure positioning

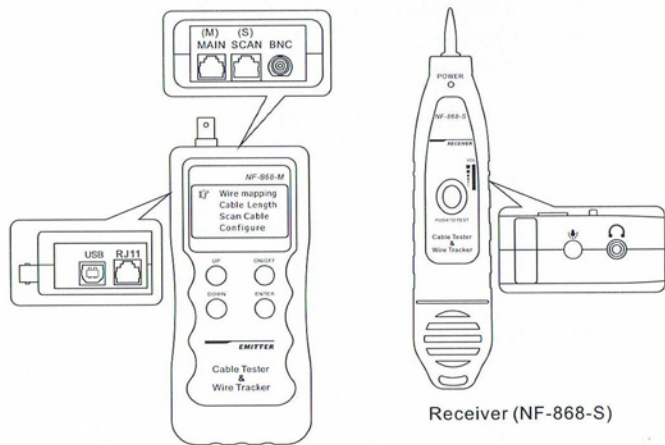
Used for Line finding two-core cable or cable with over two cores;

(11). Line finding function

Used for Line finding two-core cable or cable with over two cores;

(12). Automatic delay of power on/off

It will automatically power off in case of no operation within 15 minutes.

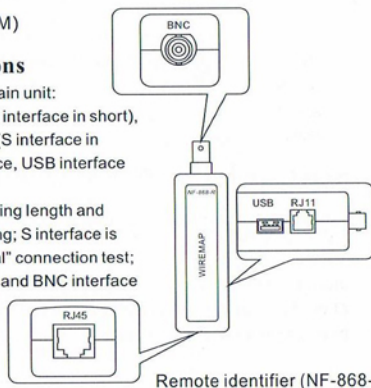
Product interface and key introduction

Main tester (NF-868-M)

Receiver (NF-868-S)

Main unit port instructions

- (1). Two RJ 45 interfaces on the main unit: one of them is "MAIN" interface (M interface in short), and the other is "SCAN" interface (S interface in short); there are also RJ11 interface, USB interface and BNC interface;
- (2). M interface is used for measuring length and others, but not for cable Line finding; S interface is used for Line finding test and "local" connection test;
- (3). RJ11 interface, USB interface and BNC interface on the main unit are used for line-to-line, length and Line finding test.

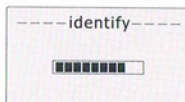


Remote identifier (NF-868-R)

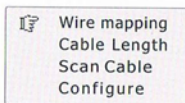
Product operation method

Powder-on display interface

Synchronous self test (-----self test dynamically displayed in the line from left to right)



5 seconds later, the following main interface is displayed:



There are four functional options in the main menu interface

- (1). Connection test --- Connection and disconnection test: to test connection of M, S R end-end cable and perform positioning of the failure;
- (2). Length test---Pairing and length measurement: to verify cable length, open circuit distance and pairing, crosstalk;
- (3). Line finding---to find target cable among lots of network cables, telephone cables, USB cables, coaxial cables and other kinds of wires;
- (4). Parameter setup---Calibration and setup (Refer to the related chapters below) Press "UP" and "DOWN" key to move the cursor "↑" "upwards and downwards to the corresponding items, and then press "ENTER" key to enter corresponding test function.

Test method (Totally four methods)

(1). M-S method---When testing network cable sequence and length with the main unit, one end is connected with the "MAIN" interface of the main unit, and the connection of the other end with "SCAN" interface of the main unit is as shown in Figure 1:



Figure 1

(2). M-R method:--- Using method of testing network cable, telephone cable, USB cable, coaxial cable with the main unit and remote identifier is as shown in Figure 2:



Figure 2

(3). S method---Using method of Line finding network cable with the main unit is as shown in Figure 3:



Figure 3

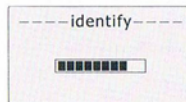
(4). Open circuit method---When measuring test, one end is connected with the main unit, and the using method that the other end is neither connected with the remote identifier nor "local" is as shown in Figure 4:



Figure 4

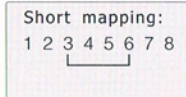
a.Cable line-to-line test:

Taking network test as an example: after entering connection test function, press "ENTER" key to perform connection test of the equipment. At this time, the following interface is shown indicating test is in process:



Test result 1: Short circuit

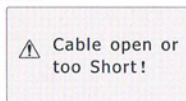
If there is short circuit with the cable and terminal, the following interface is shown (Short circuit with 3 and 6)



At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

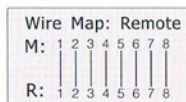
Please do not perform test again until short circuit problem solved.

Test result 2: Fail to find remote adapter (R) or local port (S) cable: if the far end of the cable to be tested is not plugged in a remote adapter (R) or when to perform local test, cable is not plugged into the local port (S), the following interface is shown:



At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 3: In case of correct connection, the testing device will automatically detect the remote adapter (R) or local port (S) cable. If it detects that the far end of the cable to be tested is with a remote adapter (R) or local port cable, the following interface is shown:



Wherein: "R" line indicates pin position of the remote adapter RJ45 port;

Wherein: "S" line indicates pin position of local RJ45 port;

Wherein: "M" line indicates pin position of local main end RJ45 port.

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 4: In case of open circuit existing on far end of the cable, the following interface is shown:

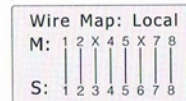


In the figure, "X" shown in "4" and "5" pin position in "R" line, indicates there is open circuit in "4" and "5" pin of the remote pin.

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Note: If to test the connection with the remote adapter (R), because the test is performed through the paired two cable cores, remote open circuit is always shown in pairing. For example, in the figure above, it means open circuit is with either or both of "pin 4" and "5". If clarification is needed, please take the main unit for remote test.

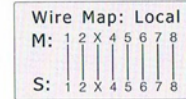
Test result 5: In case of open circuit existing on near end of the cable, the following interface is shown:



In the figure, "X" shown in "3" and "6" pin position in "M" line, indicates there is open circuit in "3" and "6" pin of the near pin.

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 6: In case of open circuit existing on middle part of the cable, the following interface is shown:



In the figure, "X" shown in "3" pin position in "M" and "S" line, indicates there is open circuit in "3" pin of the middle part of the cable. If to further find position of the open circuit, please use pairing and length measurement function of this device. Refer to the related chapter below.

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result7: USB cable line sequence test

When power on the main tester and enter the main menu of test, press "UP" and "DOWN" key to move "↔" cursor to "Parameter configuration" item, and then press "ENTER" key. After that, move the cursor to "Type" and press "ENTER" key to select USB cable, and then return to the main menu to select "Connection test". By now, you can perform test on USB cable line sequence. The following interface will be shown:

Wire Map: Remote	
M:	1 2 3 4
R:	1 2 3 4

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 8: 2-core telephone cable line sequence test

When power on the main tester and enter the main menu of test, press "UP" and "DOWN" key to move "↔" cursor to "Parameter configuration" item, and then press "ENTER" key. After that, move the cursor to "Type" and press "ENTER" key to select telephone cable, and then return to the main menu to select "Connection test". By now, you can perform test on telephone cable line sequence. The following interface will be shown:

Wire Map: Remote	
M:	X X 3 4 X X
R:	1 2 3 4 5 6

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 9: BNC coaxial cable line sequence test

When power on the main tester and enter the main menu of test, press "UP" and "DOWN" key to move "↔" cursor to "Parameter configuration" item, and then press "ENTER" key. After that, move the cursor to "Type" and press "ENTER" key to select coaxial cable, and then return to the main menu to select "Connection test". By now, you can perform test on.

coaxial line sequence. The following interface will be shown:

Wire Map: Remote	
M:	1 2
R:	1 2

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Special use: In case of exchanger power-on, the main unit can test line sequence of the connecting cables

Take network cable as an example: one end of the cable is connected with "MAIN" interface of the main unit, and other end is connected with exchanger interface. And direct connection test can be performed. If the exchanger interface tested is reliably connected, the following interface is shown (exchanger interface is 8-core):

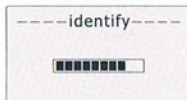
Short mapping:	
1 2 3 4 5 6 7 8	└──┴──┴──┴──┴──┴──┴──┴──┘

In case of open circuit with line 1 and 2 of the exchanger tested, the following interface is shown (exchanger interface is 8-core):

Short mapping:	
1 2 3 4 5 6 7 8	└──┴──┴──┴──┴──┴──┘

b. Cable length test:

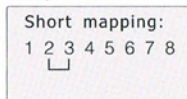
No matter whether the cable far end is connected with a remote adapter (R), the equipment can perform pairing and length measuring. Therefore, during the whole measuring process, the remote identifier (R) can be connected all the time to avoid repeated plugging. Firstly insert one end of the cable to be tested into "M" port in the main tester. When entering length testing function, press "ENTER" key to perform pairing and length testing with the equipment. At this time, the following interface is shown:



Note: 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.).

Test result 1: Short circuit

If there is short circuit with the cable and terminal, the following interface is shown (Short circuit with 2 and 3)



At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Please do not perform test again until short circuit problem solved.

Test result 2: In case of normal pairing and length test, the following interface is shown:

12	Open	105.5m
36	Open	105.3m
45	Open	105.0m
78	Open	105.2m

Wherein, the digits after pairing (e.g. 12) is the cable number of pairing. "Open" indicates only one end of the twisted-pair cable is connected with "M" end, and those follow "Open" are lengths of the cable.

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 3:

Insert one end the twisted-pair cable into "M" port, insert the other into "S" port, select twisted-pair cable test mode, return to the main menu, and select length test, and then press "ENTER" key to perform pairing and length test. The following interface is shown:

12	M-S	105.5m
36	M-S	105.3m
45	M-S	105.0m
78	M-S	105.2m

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 4:

Insert one end the twisted-pair cable into "M" port, insert the other into "R" port, select twisted-pair cable test mode, return to the main menu, and select length test, and then press "ENTER" key to perform pairing and length test. The following interface is shown:

12	M-R	105.5m
36	M-R	105.3m
45	M-R	105.0m
78	M-R	105.2m

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 5: Abnormal pairing and length test:

In case of unpaired lines found during pairing and length test, the following paired lines will be firstly shown:

12	M-R	105.5m
36	M-R	105.3m
45	M-R	105.0m
7		105.2m

Wherein, the last line shows line #7 only, and line #8 fails to find a pair. At this time, if to press "DOWN" key, the unpaired line #8 length will be shown as below:

8		105.5m
---	--	--------

At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 6: USB cable length test

(1). If to insert one end of the USB cable to be tested into "USB(4)" port of the main tester, insert the other end into "USB(4)" port of "R" end, select USB test mode, return to the main menu, and select length test, and then press "ENTER" key to perform length test with the equipment, the following interface will be shown:

1	M-R	10.1m
2	M-R	10.1m
3	M-R	10.1m
4	M-R	10.1m

It indicates that length of USB cable is 10.1m. At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

(2).If to insert one end of the USB cable to be tested into "USB(4)" port of the main tester, the other end is an open circuit, select USB test mode, return to the main menu, and select length test, and then press "ENTER" key to perform length test with the equipment, the following interface will be shown:

1	Open	10.1m
2	Open	10.1m
3	Open	10.1m
4	Open	10.1m

It indicates that length of USB cable is 10.1m. At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

Test result 7: RJ11(TEL) cable length test

(1).If to insert one end of the RJ11 cable to be tested into "TEL(6)" port of the main tester, insert the other end into "TEL(6)" port of "R" end, select telephone cable test mode, return to the main menu, and select length test, and then press "ENTER" key to perform length test with the equipment, the following interface will be shown:

1	M-R	0.0m
2	M-R	0.0m
3	M-R	10.1m
4	M-R	10.1m

And then press "UP" or "DOWN" key, the following interface will further be shown:

5	M-R	0.0m
6	M-R	0.0m

It indicates that length of telephone cable is 10.1m. At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

(2).If to insert one end of the RJ11 cable to be tested into "TEL(6)" port of the main tester, the other end is an open circuit, select telephone cable test mode, return to the main menu, and select length test, and then press "ENTER" key to perform length test with the equipment, the following interface will be shown:

1	Open	0.0m
2	Open	0.0m
3	Open	10.1m
4	Open	10.1m

And then press "UP" or "DOWN" key, the following interface will further be shown:

5	Open	0.0m
6	Open	0.0m

It indicates that length of telephone cable is 10.1m. At this time, press anykey to return to the main menu, and then press "ENTER" key for re-test.

Test result 8: BNC cable length test

If to insert one end of the BNC cable to be tested into "BNC(2)" port of the main tester, the other end is an open circuit, select BNC cable test mode, return to the main menu, and select length test, and then press "ENTER" key to perform length test with the equipment, the following interface will be shown: (Coaxial cable length can be tested only with open circuit test mode, and other methods are incapable to test its length)

1	Open	10.1m
2	Open	10.1m

It indicates that length of BNC cable is 10.1m. At this time, press any key to return to the main menu, and then press "ENTER" key for re-test.

c. Line finding test:

After powering on the main tester and entering main test menu, press "UP", "DOWN" key to move "↔" cursor to "Line finding" item, and then press "ENTER" key to find the line. The following interface will be shown:

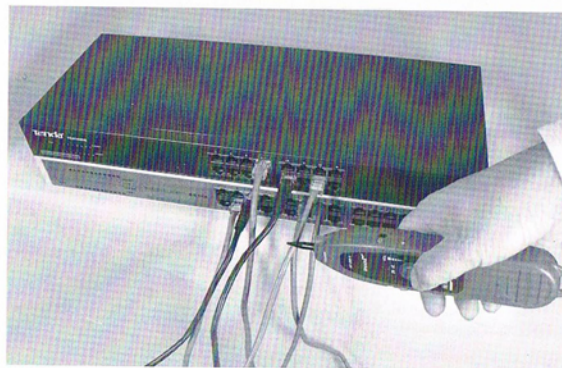
Scanning...

Connect the cable to be found with the corresponding RJ45(S) port, RJ11, USB and BNC interface of the emitter. Take network line finding as an example: connect the network cable to be found with S port of the emitter, move "↔" cursor to "line finding" item, and press "ENTER" key to perform line finding test as shown in the figure below:



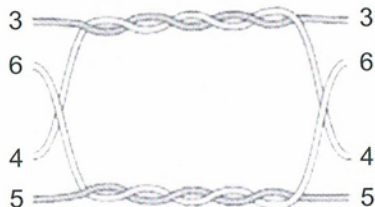
Use method of receiver

Remove the cover of battery pack, properly place in 9V battery, replace the battery cover, hold the receiver and press and hold "Test" key with the thumb, and then keep the detecting head close to the cable to find the target cable among lots of cables. When the detecting head goes close to the target cable, it beeps, and the same time the signal indicator "POWER" lights. Compare loudness of beeps and brightness degree of the signal indicator. The cable with loudest beeps and the highest brightness is just the target cable to find. In a dark test environment, you may turn on lighting lamp on the receiver for easy test as shown in the figure below:



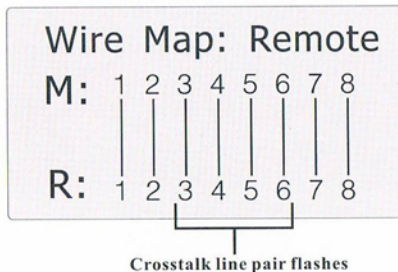
d. Crosstalk test

As shown the figure below: it shows 3, 6 and 4, 5 with crosstalk. The line pair with crosstalk will flash to indicate failure. In the line pair with crosstalk, end-to-end connection is correct. However the connected lines are from different line pairs. Line pair crosstalk will cause an over large crosstalk, and therefore, network operation is interfered.



Connection diagram of crosstalk line pair

Crosstalk interface is shown as below:



Note: In case of the non-twisted-pair cable like telephone cable, due to over large crosstalk, it generally shown as crosstalk.

Calibration and setup

After powering the main tester and entering the main test menu, press "UP", "DOWN" key to move cursor "I" to "Parameter configuration" item, and then press "ENTER" key to perform calibration and setup function. The following interface will be shown:

```

I Type: PAIR(8)
  Unit: Meter
  Calibration
  Return
  
```

Type selection:

1). Type: twisted-pair cable

Set 5E, 6E type twisted pair cable: when cursor "I" moves to "Type" item, press "ENTER" key till twisted-pair type is shown, and move the cursor "I" to "Back" item, press "ENTER" key to return to the main menu.

2). Type: telephone cable

Set telephone cable: when cursor "I" moves to "Type" item, press "ENTER" key till telephone cable type is shown, and move the cursor "I" to "Back" item, press "ENTER" key to return to the main menu.

3). Type: USB cable

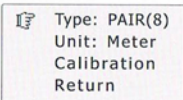
Set USB cable: when cursor "I" moves to "Type" item, press "ENTER" key till USB cable type is shown, and move the cursor "I" to "Back" item, press "ENTER" key to return to the main menu.

4). Type: BNC coaxial cable

Set BNC coaxial cable: when cursor "I" moves to "Type" item, press "ENTER" key till BNC coaxial cable type is shown, and move the cursor "I" to "Back" item, press "ENTER" key to return to the main menu.

Unit setup:**Set unit: meter**

When moving cursor "↑" to "Unit" item, press "ENTER" key till unit of meter is shown. Move the cursor "↑" to "Return" item, press "ENTER" key to return to the main menu. The following interface will be shown:



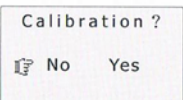
Note: Setup of the unit of inch and yard is just the same as that of meter.

Calibration function:

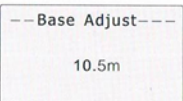
Due to different materials of the cables, calibration is required before testing the cables. The function of calibration is for accurately measuring length of the cables. It is a must to perform calibration as stated below and the cable length used for calibration is required to be over 10 meters.

When starting dynamic calibration, insert the same type of cables at a specified length into "M" port. It is unnecessary to insert into the far end.

Select the main menu. When selecting cable type and unit ready, move cursor "↑" to "Calibration parameter" item, and then press "ENTER" key. The following interface will be shown:



Select "Yes", and then press "ENTER" key, the measured length will be shown: At this time, press "UP" or "DOWN" key to adjust to show the actual length as below:



When length is given, press "ENTER" key to save the calibration value. And then exist from the calibration function, and return to the main menu.

Diagram of Series Products

NF-308



NF-838



NF-8208



NF-806B



NF-866



NF-801R



NF-902



NF-906A



NF-3468