



**nLink-830
Networks Tester
Operating Manual**

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Welcome

Thanks for use NTOOLER®" nLink" series NL-830 networks tester.

NL-830 networks tester is multifunction tool of networks maintenance and diagnosis, it designed for fast validate connectivity and reliability of Ethernet cable and networks.

Please read this manual carefully.

Please access the company website "<http://www.nettooler.com>" to get the latest electronic manual.

Package list

NL-830 network tester × 1
RT-80 data reflector × 1
RA-20A wiremap adaptor × 1

2500mAh Li-ion battery × 2
Micro Usb data cable × 1
Micro SD card (1G) × 1
1A charging adaptor × 1

Notice for Use

Warning

To avoid electricity leakage and personal injury, please comply following instruction:

- Do not use the damaged product.
- Do not use the product near the explosive gas, stream or atomy.
- No assembly needs to repair by customers. (if the product have any damage, please contact local distributor or our maintenance center which printed on the instruction)

Cleaning

Please use slight wet cotton to clean the product, **Do** not use acid, alkali solution.

Battery and Charging

NL-830 tester use Li-ion batteries, the batteries must be take out when tester will not be used in a long time period.

Please use the appointed battery only. Use the other batteries may cause the tester damaged or even the explosion.

Please use the appointed charging adaptor and data cable, recommend using standard 1-1.5A electric output USB charging adaptor.

Charging should be process during 0°C-45°C.

LED indicator show orange "battery charging".

LED indicator show green "charging complete"

Peripheral interface and properties

Brief introduction

Cable test include Cable diagnosis, Speeds test and Impedence test. Speed test and impedance test need to be cooperated with RT-80 adaptor or with another NL-830 tester.

Test can be done by auto or individually, and test results can be saved.

Network test include Port, PoE test, Switch and Internet test. Test also can be done by auto or individually, and test results can be saved.

Cable test

Cable diagnosis can indicate open,short,online,fail and length of cable information.

Speed test can test cable communication load capacity under 1000M, 100M, 10M model with 64 byte and 1518 byte double test.

Impedence test can get cable signal loss rate and cable impedance value.

Wiremap

The test will show cable Wiremap graphically.

Switch discovery

The tester can discovery and indicate equipment info and neighbor info through LLDP(IEEE) CDP (Cisco) (such as device name, software version, VLAN info, Ports info etc)

PoE port voltage level and of power and Ethernet power supply pairs can be tested to determine the (PoE 和 PoE+) problems.

Flash ports can flash the network device ports to find the corresponding ports or device.

Network communication test

Graphically display network communication delay though persistent ICMP protocol Ping test.

Identify DHCP client availability.

Connect pre-set URL page to check up DNS and HTTP malfunction.

Data reflector

NL-830 can be set to data reflector to cooperate with another NL-830 device for cable test

Audio generator

NL-830 can generate digital audio signal to work with NT-120 audio tracker (optional accessories) to find the target cable.

Cable ID

To identify the cable ID to cooperate with RA-30 ID adaptors (optional accessories)

USB storage

NL-830 can be a storage device by connecting computer for test report reading and removable storage.

System setting

IP/DNS/Gateway
Languages
Sound
LCD backlight
Date and Time
TF card management

RT-80 Data reflector

Cooperate with the main tester in Speed test and impendence test.

Reportview client software

Test results can save, read, and recognized in Reportview software to make status report, and reports can be printed.

Reportview client software and the introduction can download from NL-830 USB storage card, and you can also get the latest version on <http://www.nettooler.com/> website.

Operation Chart



NL-830 has two RJ-45 ports on the top and has one Micro SD card connector, one Mini USB connector on the bottom. Front have six LED status indicator and one charging indicator. NL-830 has one 2.2 inch LCD screen, the battery install in the back.

Connectors

RJ45 ports:

The left is the main port to process cable, networks, ping, and flash ports tests.

The right port use for Wiremap, Audio generator and Cable ID test

Standard Micro-SD card connector,(Max 8GB)

Please keep Micro-SD has at least 128M or bigger room for test results storage.

Mini-USB connector is used for connecting computer, and use "Reportview" client to generate report.

LED

Status indicator: PoE, 10M, 100M, 1000M, ACT and DUP.

Charging indicator: Red (battery charging)

Green (charging complete)

Button

Three functional buttons are set, test, save and back correspond with LCD screen's menu.

Direction keys use for selection, cursor move, and changing numbers.

Confirmed button uses for "enter"

Power button uses for turn on/off of power.

Screen

2.2 inch, 176 x220pixles.

Battery

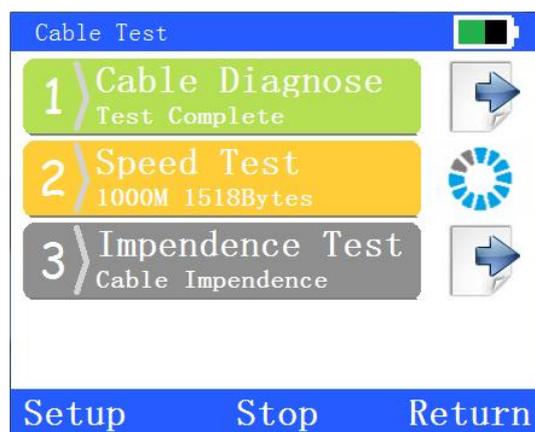
Standard 2500mAh Li-ion batteries.

Operation

Testing

Cable and network test can be automatically or individually. You can press “Stop” or “Enter” key to stop test.

Green	Test succeed
Orange	Test processing
Gray	Test has not started
Red	Test failed



Exp

Automatic test

Automatically test all programs in Cable test or Network test.

Individual test and results review

In Cable test or Network test, programs can be test individually, and move cursor to the right arrow icon to press “Enter” as you can check the test results.

Results saving

“Cable test, Network test and Wiremap” test can be saved.

ID number need to be input when you save the results.

When you test a cable with all three kind of test, ID number should be the **same** in order to integrate the test report.

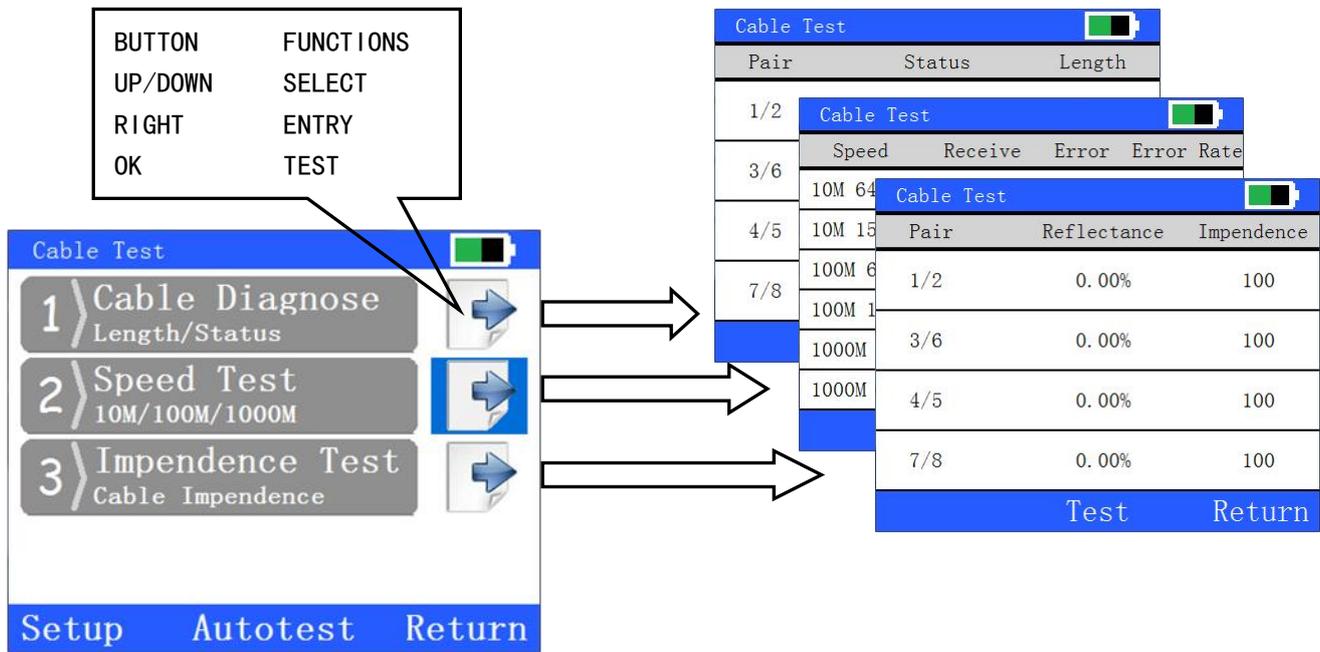
Test report

Test report can create and print in PDF form though “Reportview” client software.

Program introduction

Cable Test

It includes cable diagnosis, speed test and impedance test. (Use the **Left** port)



Cable Diagnosis

The program is used for twisted pair malfunction test and cable pair's electrical status test based on TDR (Time domain reflectometry) technology .You can plug in one end of connector to get the cable info.

Pair	Status	Length
1/2	Open	2.4m
3/6	Open	2.4m
4/5	Open	2.4m
7/8	Open	2.4m

Test Return

Exp

Cable status:

- Open: disconnected or break off
- Short: pair's short
- Online: correct connection

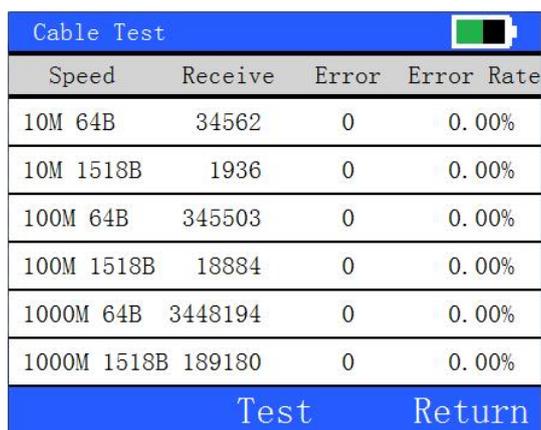
Fail: un-identified cable or is malfunction

Hint: the device could not get cable length when cable pair is “online”. You could not get correct test result when cable through any network equipment.

Speed Test

The test is used for twisted pair cable signal transmission speed capacity.

One end of tested cable need to plug in NL-830’s left port, and the other end of cable need to connect to RT-80 data reflector or another NL-830 which in reflector modal before you start the test.



Cable Test			
Speed	Receive	Error	Error Rate
10M 64B	34562	0	0.00%
10M 1518B	1936	0	0.00%
100M 64B	345503	0	0.00%
100M 1518B	18884	0	0.00%
1000M 64B	3448194	0	0.00%
1000M 1518B	189180	0	0.00%
Test		Return	

Exp

Hint: You could not get correct test result when cable through any network equipment.

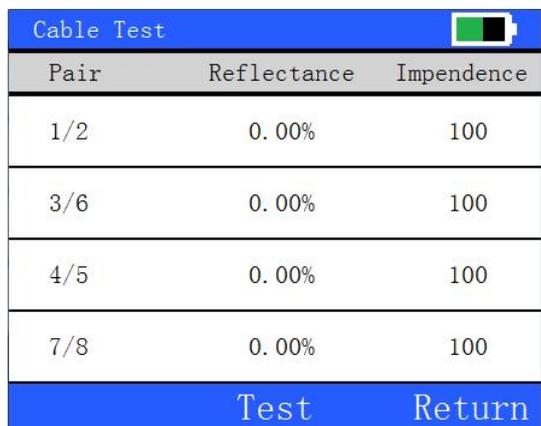
Impedence Test

The test is used for twisted pair transmission impedance. Standard twisted pair cable impedance is 100Ω

When tested data is far above or under standard value, it indicates that network transmission signal will produce reflection and damping. And it will affect network transmission accessibility.

One end of tested cable need to plug in NL-830’s left port, and the other end of cable need to connect to RT-80 data reflector or another NL-830 which in reflector modal before you start the test.

You don't need to turn on RT-80 data reflector



Cable Test		
Pair	Reflectance	Impedence
1/2	0.00%	100
3/6	0.00%	100
4/5	0.00%	100
7/8	0.00%	100
Test		Return

Exp

Hint: reflectivity a.k.a. Echo reflectivity which means the ratio of signal callback range because of impedance mismatching.

You don't need to turn on RT-80 data reflector when using this program, but if you turn it on you must wait until the LED indicators "1000M" and "DUP" flashed.

Cable diagnosis setting

In cable diagnosis test main menu, press "set" button to change the testing parameter.

It includes:

Speed test time: setting each of the six speed test catalogue time. (Default value 5 seconds)

Twisted pair cable type: cat5e or cat6.

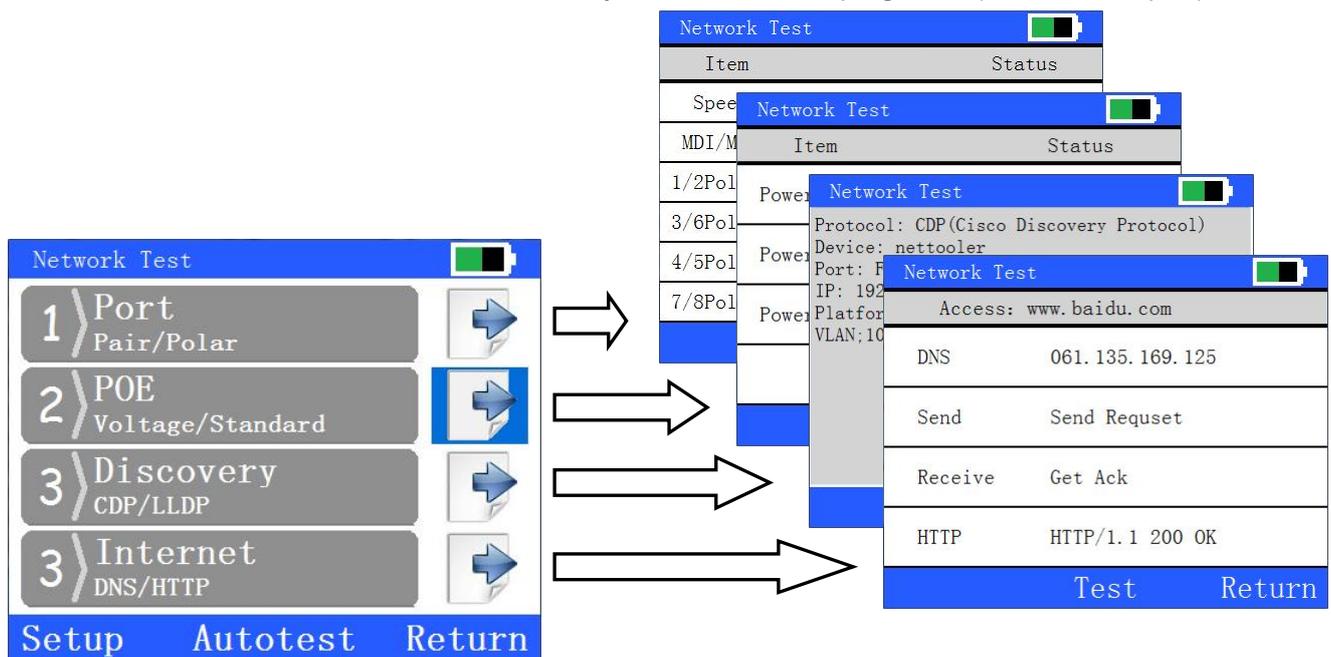
Remote setting:

	Remote setting
Cable diagnosis	No demands. NL830 could not display cable length when connecting to the working network equipment. Cable length will display when cable is "open" or "short".
Speed test	Need to connect to RT-80 data reflector.
Impedence test	Need to connect to RT-80 data reflector but RT-80 do not need to turn on.

Hint: NL830 could not display cable length when connecting to the working network equipment. If need the cable length in test report, you must take three tests individually (during the cable diagnosis, data reflector must disconnected). After three test completed, press "Save" button to save the test results.

Network Test

Network test include Port, PoE, Device discovery and Internet four programs. (Use the **Left** port)



Port

The test is used for testing switch port's speed, line sequence and pair's polarity.

Network Test 	
Item	Status
Speed	1000Mbps
MDI/MDIX	MDIX
1/2Polarity	Positive
3/6Polarity	Positive
4/5Polarity	Positive
7/8Polarity	Positive
Test Return	

Exp

Hint: line sequence will not indicate correctly if network equipment opens MDI/MDIX function.

PoE

The test is used for Ethernet power equipment(IEEE802.3af 和 IEEE802.3at) testing, include power voltage, power pairs and PD model.

The nonstandard PSE device could also be tested, but PoE LED indicator will not be lighted.

Network Test 	
Item	Status
Power Voltage	48.02V
Power Pair	4/5 7/8
Power Mode	802.3at
Test Return	

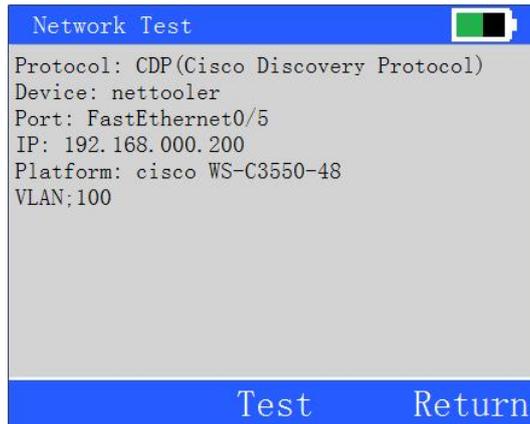
Exp

Discovery

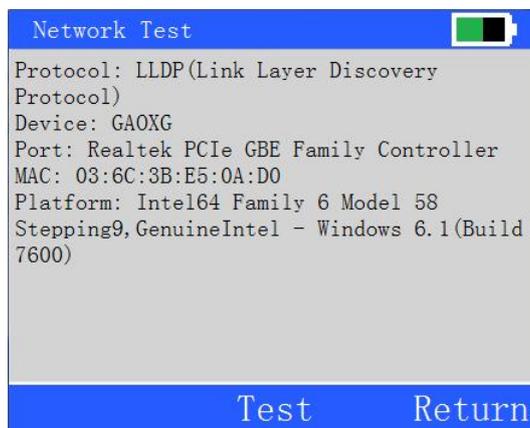
The test is used for getting network equipment's basic information through neighbor discovery protocol, Information includes device name, port info, IP, MAC, firmware version, and VLAN info etc.

It support CDP(Cisco) and LLDP(IEEE) protocol.

CDP Example:



LLDP Example:

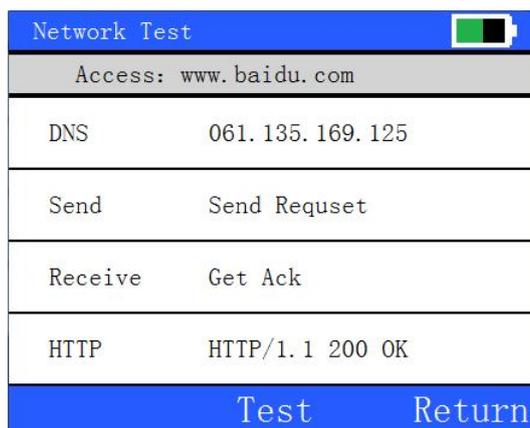


Internet

The test is used for Internet accessing.

It include DNS analysis with pointed URL, HTTP page connecting.

HTTP page connecting can indicate web server status code info.



Exp

Internet Test setting

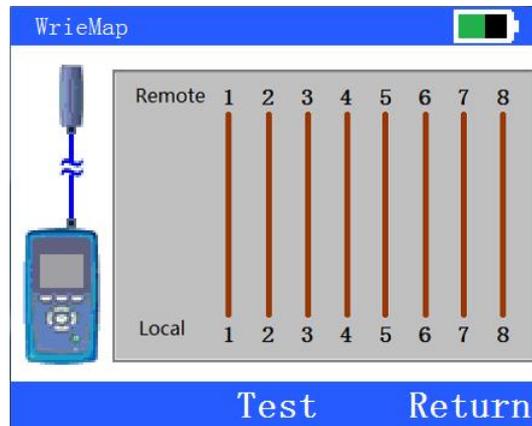
1: PD power simulation: set the simulation power level of NL-830 (default IEEE802.3af 12.95W) Class 4 25.5W is IEEE802.3at standard.

2: Internet test address: include three specified address.

Wiremap

The test needs to work with RA-20A remote adaptor. (Use the **Right** port)

The results can be saved after test.



Exp

PING

The test is used for exam the connectivity from NL-830 to an IP nod. (Use the **Left** port)

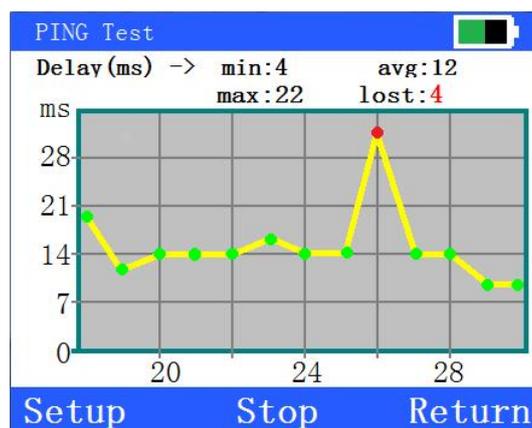
ICMP data packet can be manual setting.

Before you start test you need to set local IP address. (System setting → Local IP)

If DHCP server is available, you can also get local IP address by using DHCP setting. (System setting → Local IP)

The program can indicate max and minimum time, average time and data packet lost value as a chart.

Y axis indicate data packet delay (ms), X axis indicate the data packet value of sending.



Exp

Setting:

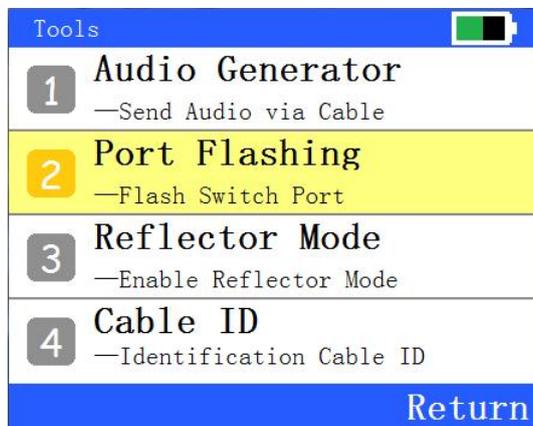
Dest.IP: the target IP address

Pkt Size: sending ICMP data packet size , configure 12-1492 bytes, default 32

TTL(Time to Live): Time to Live, configure 1-128.
Timeout: configure 10-2000 ms, default 2000ms.

Test Tools

It includes four independent programs: Audio generator, Flash port, Reflector model and Cable ID.



Exp

Audio Generator

NL-830 can generate three kinds of tone of digital audio signal to work with NT-120 audio tracker (optional accessories) to find the target cable. (Use the Right port)

Port Flashing

The test is used for identity the target switch port or cable. (Use the Left port)

After connecting NL-830 to a network equipment, turn on the program, the equipment port LED indicator will flash. Then the target switch or cable can be identified.

Reflector mode

Set NL-830 to a data reflector to with another NL-830. (Use the **Left** port under the mode)

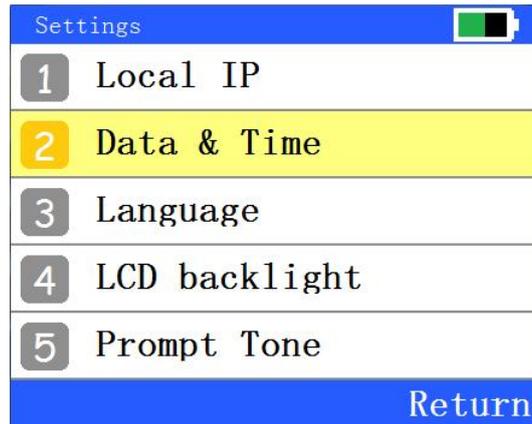
Cable ID

To identify the cable ID cooperate with RA-30 ID adaptors (optional accessories). (Use the **Right** port)

It can support up to sixteen ID adaptors.

It can connect to twisted pairs cable or PSTN cable.

System setting



Exp

Local IP Setting

Set local IP address, subnet mask, gateway and DNS server address. It can also set for obtain DHCP serve if available.

Data and Time

Set time and data, it will plug in test report automatically.

Languages

Chinese or English

LCD backlight

Adjust LCD backlight

Tone

Turn on/off tone

System info

Indicate device info and local MAC address

Memory card manage

“Delete Files” is used for delete all test report documents file’s data, this instruction could not be reversed. Please make a copy of test results data within memory card for cautions.

“Create directories” is used for create test report documents file in a new Micro-SD card.

Hint: “Delete Files” operation will only delete the test documents file’s data, it will not affect the other files in memory card.

Electrical specifications

Specification	Description
Size	136*77*32 mm

weights	240g (Battery included)
Work environment	0~40℃
Storage environment	-20~+85℃
Charging environment	0~35℃
Work humidity	<=90% RH (no condensation)
Power model	Mini USB port , 5V , 1.5A (Max.)
Battery	Li-Lon battery , 3.7V, 2500maH
Charging time	2.5-3 hrs
Working time	4-6 hrs

Properties	Description
Display	2.2" TFT LCD , 220x176 pixels
LED	seven
Buttons	nine
Storage	Micro-SD , 8G max
App connector	USB 2.0 FS
Networks ports	Two RJ-45 ports
PoE	IEEE802.3af, IEEE802.3at
Ethernet ports	RJ-45, 10/100/1000Mbps, self-adaption
Cable	Cat3, Cat5, Cat5e, Cat6 UTP/STP
Protocol	IP , ICMP , TCP , UDP , DHCP , DNS , HTTP , LLDP , CDP , NDP , etc.

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