

Notice

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Explanation

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Section I Overview

ADSL2 + Tester is designed for xDSL (ADSL2 +, ADSL2, READSL, ADSL, etc.) handheld communication instrument that used for the opening of business, maintenance and testing, is intelligent instrument for user front-line installation and maintenance in the communications industry ,The tester can not only test the ADSL2 + / ADSL link management layer parameters, but also set the alarm threshold, the physical layer parameters to achieve the alarm analysis; graphics and data queries can be viewed DMT subchannel bit distribution, you can view the current line the error situation; network layer test features can be LAN and WAN Ping test to verify IP-level network link chain continuity.The tester has a flexible keyboard input, testing personnel to facilitate the user name, password, VPI / VCI, alert thresholds and other parameters changes. multimeter test not only test the line voltage, loop resistance, capacitance and insulation parameters, but also can estimate the line length, installation and maintenance personnel to meet all kinds of first-line user!

Small size , nice, hard shell texture, is suitable for various types of field engineering operations.Economical and practical, which is the best choice for testing.

Section II Main Features

2.1 xDSLtest specifications and funtions

2.1.1 Test physical layer parameters

Comply with multi-standards: ITU-T G.992.1 (G.DMT), ITU-T G.992.2 (G.Lite), ADSL2 (G.992.3) , ADSL2+(G.992.5) 。 Automatically fit for the ADSL line

standards, real-time display ADSL line connection status

Test DSL line transmission parameters

display DSL line standard, the frame structure and a good connection mode connections;

DSL Max Bit Rate (Downstream, Upstream);

DSL Line upstream channel rate: 0~1.2Mbps;

DSL Line downstream channel rate: 0~24Mbps;

DSL LineAtten (Downstream, Upstream): 0~63.5dB;

DSL SNR Margin (Downstream, Upstream): 0~32dB;

DSL Power(Downstream, Upstream);

2.1.2 Set the threshold function

Threshold parameters can be set for each physical layer parameters for alarm analysis, visual display indicators of compliance, enhance work efficiency.

2.1.3 Alarm

Alarm analysis: according to the various physical layer parameters of the test threshold and the results of the current test alarm data analysis, direct display OK or excessive value.at the same time that can show the capacity ratio of line .

2.2 BER testing

After the physical layer connectivity, you can refresh the display by the dynamic test proximal error and distal lines of error messages, the number of statistical error, including: HEC, OCD, CRC(Optional) error.

2.3 Bit distribution function

2.3.1 Graphical display

graphically visualize the DMT subchanne bit distribution.

2.3.1 Data query

way of data query to query each subchannel subchannel number, frequency, and the subchannel allocation on the number of bits.

2.4 PING testing

By sending "Internet Control Message Protocol (ICMP)" echo request message, authentication and another TCP / IP computer's IP-level connectivity. The Ping Test on this test can show the number of packets sent and received, percentage of packet loss and other information.

2.4.1 LAN PING testing

IP PING testing, Find out the faultily connected PC and statistic Percentage of PING packet loss.

2.4.2 WAN PING testing

IP or domain ping testing, statistic Percentage of PING packet loss

2.5 DMM (Optional)

The tester can test the line AC and DC voltage, loop resistance, capacitance and insulation, and other physical parameters, each range of test items and error as follows:

Line voltage testing:

DC -400V ~ 400V error: $\pm 5\% \pm 2V$

AC 0 ~ 290V error: $\pm 5\% \pm 2V$

Line round resistance testing:

0 ~ 20K Ω error: $\pm 3\% \pm 2\Omega$

Insulation resistance testing:

0 ~ 1.0M Ω error: $\pm 0.1 M \Omega$

1.0 ~ 50M Ω error: $\pm 10\% \pm 0.5 M \Omega$

Line capacitance testing:

0 ~ 10nF error: $\pm 2nF$

10 ~ 1000nF error: $\pm 3\% \pm 2nF$

Resistance and capacitance measurements in the ring state according to the results can be automatically converted and test line length for reference.

2.6 Saved the data

2.6.1 View

The tester can save 99 set of test data for user, and can browse the saved 99 data

according to different number by the machine screen.

2.6.2 Clear

you can clear all the setting records in flash

2.7 parameter setting

2.7.1 Priority standards

Built-in Modem can be set to "Adsl2 + adaptive mode" or "multi-mode" priority adaptation standard, so you can carry out all types of standards-compliant central office.

2.7.2 Authentication information management

The machine can read or modify the built-in dial-tester account and password, the machine read or modify the authentication dial-up PAP / CHAP, management software can also read the background and setting. The tester comes with keyboard input, operational flexibility, according to different customer needs to make changes anytime, anywhere on the authentication information to facilitate the verification of individual user's user name and password for validity.

2.7.3 VPI/VCI management

Users can query the local VPI / VCI parameter and then modify their own in VPI/VCI

2.7.4 Others

You can set the LCD LED backlight display.

In the boot mode, you can always adjust the LCD timing closure, to ensure the observation of liquid crystal display of information in the best condition.

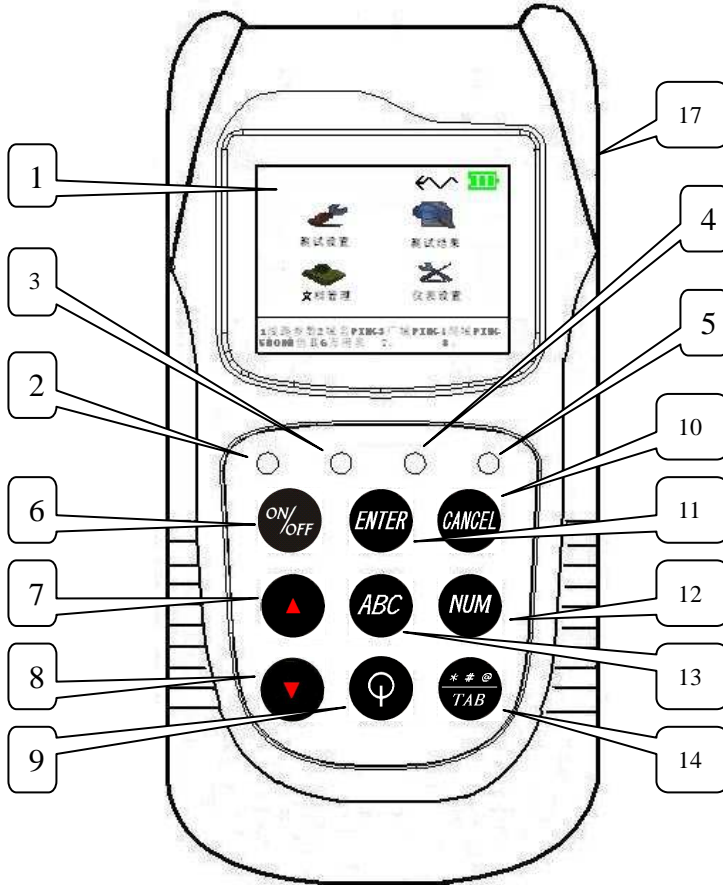
Choose Miscellaneous Settings, restore the factory settings

2.8 Size and weight

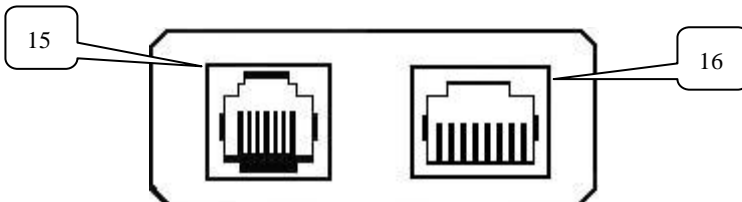
2.8.1 Size: 201×92×36mm

2.8.2 Weight: 460g

Section III Appearance



Appearance



- | | |
|----------------------|----------------------|
| 1、LCD | 2、LNK Indicator |
| 3、ETH Indicator | 4、DATA Indicator |
| 5、POWER Indicator | 6、On / off key |
| 7、Up Key | 8、Down Key |
| 9、Time/Module switch | 10、Cancel/ Esc Key |
| 11、OK/ Enter Key | 12、Num switching key |
| 13、ABC switching key | 14、Tab switching key |
| 15、RJ11 | 16、RJ45 |
| 17、Recharge | |

- Ethernet indicator: The long bright light, indicating that the Ethernet link is normal; the light flashes, indicating that there is Ethernet traffic;
- **LINK** indicator: The light flashes slowly, indicating the central office is looking for; quick flash, indicating that the link xDSL xDSL Modem handshake ongoing training; always light, indicating that the xDSL link establishment and functioning properly;
- **DATA** indicator: The lamp has been lit, indicating that the PPPoE dial-up success;
- **POWER** indicator: The lamps lit in the charge state, said it is charging。






Section IV Before using

- For the first time, you should observe the battery capacity, the proposed instrument is fully charged before use;
- If abnormal operation occurs, please reboot after shutdown test;
- button operation, a continuous button, the phenomenon may appear too




sensitive.

- user in use, the test will be affected, disconnect the client testing;
- PPPoE or PPPoA for dialing, make sure the user name, password, VPI, VCI, and PAP / CHAP is correct;
- We will try to show button prompt on the LCD display, follow the prompt for the correct operation.
- If the loop resistance, capacitance, insulation test, disconnect the line and central office connection.

Instrument input: Press    choose ABC、num、

tabinput; by   turn the page,   

Respectively, letters, numbers, symbols, single-page order choices ,

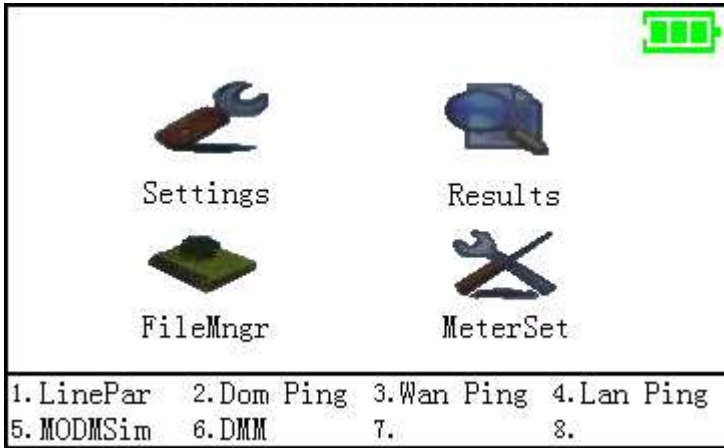
 for the single page in reverse order selection;  

confirmation of the selected character input or delete.

Section V Operation


5.1 Instrument power

Press <power switch> key for about 2 seconds, the screen scraper into the manufacturers home page, pause for 4 seconds, the screen displays to enter the main menu shown in Figure 5.1:



(Figure 5.1)



5.2 Equipment shutdown

- Instruments in the normal power state, press  turned off;

5.3 Module switch

After starting the test instrument automatically open the ADSL module.

After starting, press  to close the module.

In the off state, press  modules can also be opened again. In the off the state of the module, Press  to open the module.

5.4 xDSLtesting

5.4.1 Line Parameter

Move the cursor to Standard; you can select the item shown as below

Parameter	Item	Organization	Detail
Standard	ANSI T1.413	ANSI	ANSI T1.413
	G.DMT	ITU	G.992.1
	G.LITE	ITU	G.992.2
	MULTI	Self adapt, it will choose a fit standard automatic	

Move the cursor to DnTransRate, DnCapacity, DnNoiseMargin, DnLineAtten, UpLineAtten, and press the corresponding key to edit, about the detail of setting, view the Table below.

Parameter	Default	Threshold range
DnTransRate	OFF, No threshold	32~11200 Kbps
DnNoiseMargin	OFF, No threshold	0~63.5dB
DnCapacity	OFF, No threshold	1~100%
UpLineAtten	OFF, No threshold	0~63.5dB
DnLineAtten	OFF, No threshold	0~63.5dB

This function is used to set various parameters of physical layer test threshold for the various physical layer parameters of the alarm analysis, if the threshold is set incorrectly, or corrupted, you can restore the factory settings miscellaneous default threshold.

5.4.2 Line parameter results interface

Line parameter setup is complete, and connected to the ADSL lines, the instrument panel connected LNK light starts blinking, about 30 seconds, such as the line of normal, ADSL2 + line connection is successful, ETH connection on the instrument panel lights to stop flashing, and lights up. In the "Line Parameters" sub-menu window, according to key prompt up or down button to select the "Start Test" to start the test, instrumentation, test results screen interface to switch to the interface

and displays the line parameter measurement information, as shown in Figure 5.2. The results of line parameter information, including basic analysis, parameter analysis, link analysis, alarm analysis, sub-carrier maps.

Basic analysis, Tab 9.

Parameter analysis, Tab 10.

Alarm analysis, Tab 11.

Link analysis, Tab 12.

Basic	
Standard	ADSL2+
Connection	Succese
Channel	----
UpRate	---- Kbps
DnRate	---- Kbps

1. Basic	2. Parametr	3. Link	4. Alarm
5. DMT	6.	7.	8. Viewset

Table 9 shows basic analysis of line parameters

Result	Item	Description
Parameter	FAST(Downstream, Upstream)	Fast Bit Rates
	INTL(Downstream, Upstream)	Interleaved Bit Rate
	MAX(Downstream, Upstream)	Max Bit Rate
	Capability (Downstream, Upstream)	Capability Utilize Rate
	Power(Downstream, Upstream)	Transmit Power
	LineAtten (Downstream, Upstream)	Line Attenuation , downstream range:
	SNR Margin (Downstream, Upstream)	Signal to Noise Ratio Margin

Table 10 shows line parameters of the parametric analysis

Result	Item	Description
Alarm	Downstream Transmit Speed Threshold	Base on the Alarm Threshold
	Downstream SNR Margin Threshold	
	Downstream Channel Threshold	
	Downstream Line Attenuation Threshold	
	Upstream Line Attenuation Threshold	

Table 11 Analysis of line parameters of the warning note

Pay Attention : the alarm analysis is useless,when the alarm threshold setting is in the off state.

Link results table shown as below

Result	Items	Description	
		Local	Remote
Link	LOP	Loss of Power	
	LOS	Loss of Signal	
	SEF	Severe Error Frame	
	CRC INTL	Cyclic Redundancy Check (CRC) anomalies INTL	
	CRC FAST	Cyclic Redundancy Check (CRC) anomalies FAST	
	HEC INTL	Header Error Check (HEC) INTL	
	HEC FAST	Header Error Check (HEC) FAST	
	OCD INTL	Out of Cell Delineation (OCD) INTL	
	OCD FAST	Out of Cell Delineation (OCD) FAST	
	SES	Sever Error Second (SES)	
	ES	Error Second (ES)	
	BitErr	Bit Error(BE)	

Table 12 shows line parameters of link analysis

5.5 Bit distribution

ADSL business is divided into three sections for data and voice transmission: downstream channel, upstream channel and the general voice channel (POTS).POTS, with uplink and downlink channel separator (splitter) separated.so, ADSL transmission does not affect the normal telephone use.

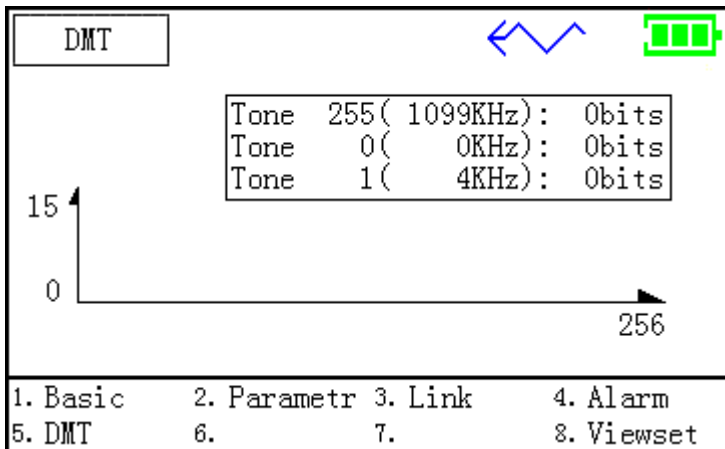
ADSL uses discrete multi-carrier modulation (DMT) technology, including 256 sub-carrier channel, each subcarrier channel accounted for 4.3125kHz bandwidth, total bandwidth of up to $256 \times 4.3125 = 1104\text{kHz}$.ADSL2 + lines for a total of 512

sub-carrier channel occupy a total bandwidth of up to $512 \times 4.3125 = 2208\text{kHz}$.

Bin0 (channel A) for voice transmission; Bin1 ~ Bin5 transition zone occupied by voice segmentation filter; usually start from the Bin6 until Bin30 for uplink transmission; FDM band segmentation filters filtering often takes Bin31 ~ Bin36; Bin37 to Bin255 for downlink transmission (for the ADSL2 + line, Bin37 to Bin511 for downlink transmission), shown in Figure 1.

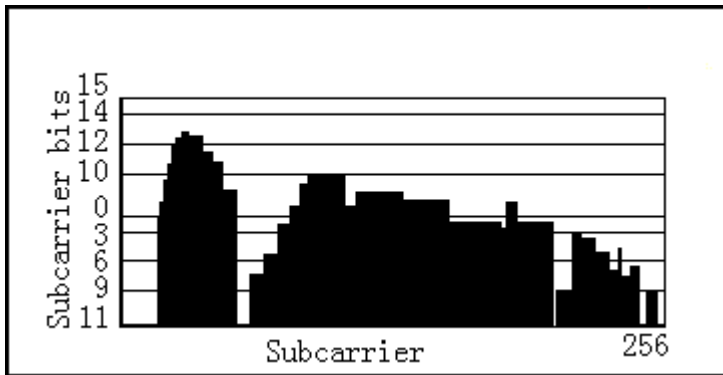
Each sub-channel using QAM modulation, each sub-channel modulation up to 15 bits, ADSL Modem various frequency bands according to adaptively adjust the signal to noise ratio relative to the number of bits transmitted on sub-channel number.DMT technology is equivalent to using the 256 (ADSL2 + 512) sub-Modem, it can be based on line conditions in real time, close or open a sub-channel or adjust the number of bits transmitted on subchannels.The modulation of each subcarrier is 2 to 15 bits, the more the number of modulation bits, the higher signal to noise ratio requirements.

Menu in the test results, by the number keys to select the "bit distribution" function, as shown in Figure 5.3



(Figure 5.3)

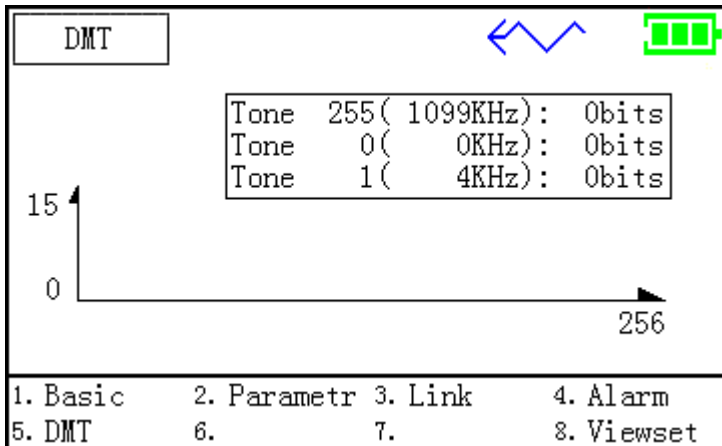
5.5.1 Graphics bit distribution function



(Figure 5.4)

5.5.2 Distribution function data query bit

Data query as shown in Figure 5.5, you can <the upper and lower> key to select the option to browse the sub-channel can also press the Cancel button to return to the main menu



(Figure 5.5)

Screen displays the following three aspects:


- 1.the input sub-channel number, you can use the arrow keys on the increase (+10) and the down arrow key to decrease (-1), select the number you want to query the subchannels。
- 2.Bits:Display the current sub-channel corresponds to the number of bits of the modulation。
- 3.f: Display the corresponding sub-channel occupied by the current frequency, the frequency of each sub-channel bandwidth occupied by 4.3125KHZ。

5.6 PING testing

5.6.1 LAN ping

The ADSL2 + tester through the HUB / SWITCH access the LAN (LAN), or by direct access through PC cable card, the tester is turned on, ETH indicator light that has been connected properly。

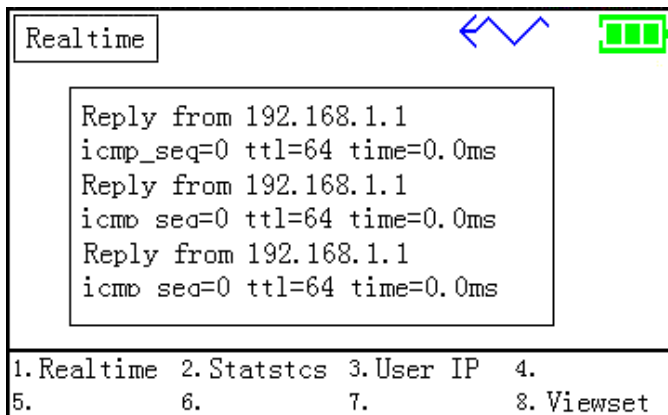
In the main menu by the number keys select the "LAN Ping", press <confirm> button, enter the IP address and correct the PPPoE / PPPoA user name, password, shown in Figure 5.6:

LAN PING			
Dest IP	192.168.10.10		
LAN IP	192.168.10.100		
Submask	255.255.255.0		
1. Edit	2.	3.	4.
5.	6.	7.	8. Start

(Figure 5.6)

Figure 5.7 Ping test results show, the first of the Ping the IP address or domain name is resolved, and statistics the number of sending and receiving ICMP packets,

and display the last packet loss percentage.



(Figure.7)

Note: 192.168.1.1 is only as an example, in the actual tests show you the actual IP address of the Ping, you can manage the local IP, according to the needs of your LAN IP configuration of this level.

If the Ping test is unsuccessful, check the advanced properties of PC, network firewall is turned off.

Ping results display, you can press "Cancel" button to return.

5.6.2 WAN Ping

Line access to ADSL2 + DSL port tester, the tester power, and other physical layer activation (LNK LED Steady physical layer has been activated), run the dial-up test, according to the local keyboard or writing background management maintenance software enter the user name and password to dial-up, dial-up can only proceed after a successful WAN Ping Test (DATA dial indicator Steady success).

In the "Test Settings" menu, select the "WAN PING", press <confirm> to enter into the the "WAN PING" sub-menu as shown in Figure 5.8:

Up or down arrow keys to select and enter the correct IP address and PPPoE / PPPoA user name, password.

WAN PING	
Dest IP	192.168.10.100
User	88888888
Passwd	88888888
VPI. VCI	0.35

1. Edit	2.	3.	4.
5.	6.	7.	8. Start

(Figure 5.8)

Such as the IP address of 58.61.166.142, you can directly enter the target IP address of the keyboard, enter the complete press <confirm> button,

Figure 5.9 Ping test results show, the first of the Ping the IP address or domain name is resolved, and statistics the number of sending and receiving ICMP packets, and display the last packet loss percentage.

Statstcs	
SendMsg	3
RespMsg	3
UNrespMsg	0
LostRate	0.0%
Max Rtt	25ms
Min Rtt	10ms
Avg Rtt	15ms


1.Realtime	2.Statstcs	3.User IP	4.
5.	6.	7.	8. Viewset

(Figure 5.9)

5.6.3 Domain name Ping testing

In the "Test Settings" menu, select the "domain name ping", press <confirm> to enter into a "domain name Ping" sub-menu shown in 如图 5.10 所示 Press <confirmation> key, enter the domain name and the correct PPPoE / PPPoA user

name, password, can enter through the keyboard to switch to the English domain name. The tester has three commonly used fixed domain name (Tencent QQ, Sina, 163) are available.

Dom PING			
Dom	www.qq.com		
User	88888888		
Passwd	88888888		
VPI.VCI	0.35		
1. Edit	2.	3.	4.
5.	6.	7.	8. Start

(Figure 5.10)


Enter completely, press <confirmation> key, name Ping test results show the WAN IP address with the Ping test result will be displayed the same interface, and is not described in detail.

5.7 Test records management functions

In the main menu by the arrow keys move the cursor to "document management" function, press the <confirm> button to enter the "document management" sub-menu.

Set and result access

Set the current test instrument with the results in the memory, easy to read the next use. Settings can also be stored out, as the current setting, as shown, the LCD monitor is set to file, store the left column number, the right column is the configuration file to work. The instrument can store a total of 10 settings and results, each page can store 5, click Next to enter the other store pages

FileMngr	Remain 9		
SaveNo.	WorkMode		
CurSetAndRslt	LinePar		
1			
1. ViewSet 2. ViewRslt 3. Save 4. Delete			
5. Clear 6. NxtPage 7. 8.			

1. Save the current settings and results

Settings with the current settings, enter the interface, select a store number, press 3 storage, the results of the current settings are stored in the access file.

2. Read the configuration file

Read the storage options, press 2 more settings, you can view the detailed settings of the read file; at this time does not change the current settings of the content. When read by the test set, the current settings set to read the contents of this file immediately instead.

3. Read results file

Read the storage options, press 2 detailed results, you can view the test results by reading the file, you can see by reading the results of real-time analysis, statistical analysis, user IP information, the results can also be set to view this situation, according to View settings can be set into the details of this file.

4 . Delete settings and results files

Move the cursor to the file you want to delete the file name, press 4 to delete.

5 .Clear set and results files


Move the cursor to any file stored number, press 5 clear all records.

5.8 DMM (Optional)

Built-in digital multimeter, you can test the line DC / AC voltage, the line loop resistance, capacitance and insulation, and other parameters. Maintenance

personnel can use these functions to test whether there is dangerous voltage on the line, the existence of the telephone line voltage is 48V, in order to help us better determine the cause and location of obstacles.

In the main menu, you can accord to button prompt, through the arrow keys to move the cursor to the "meter" feature, press the "confirm" key to enter sub-menu multimeter 如（图 5.11）所示。

DMM			
DCV	0mV		
ACV			
Capac			
Res			
Length Estimate			
0.4mmDia			
0.5mmDia			
0.6mmDia			
1. DCV	2. ACV	3. Capac	4. Res
5.	6.	7.	8.

(Figure 5.11)

the DSL line tester to test access port, red snakehead test folder on the line to be received, by choosing different test sub-menu, the instrument can be, respectively, voltage, loop resistance, capacitance and insulation tests.

5.8.1 Voltage test

Sub-menu in the meter, use the arrow keys move the cursor to "DC" or "AC voltage" folder access will test the line to be tested, according to <confirm> key to enter into voltage test condition, the tester will be displayed directly on the line DC voltage value.

This test for DC voltage tests on the range of -400 ~ 400V. Use of voltage test circuit can test whether the signal on the regular phone service bundled with the ADSL line, if the line voltage in the low or 0V, it shows that the line does not open or there is a serious business of poor insulation, short circuit, circuit and other fault

lines, please check the line for maintenance.

This test is used when the AC voltage testing, high voltage AC test circuit, to prevent a dangerous line staff, in case of high voltage when the test fish, carefully remove the clip, so as to avoid electric shock.

This test is limited to AC voltage test, test the range of 0 ~ 290V. The test is completed, press "Cancel" button to return to the main menu state.

5.8.2 Resistance test

First disconnect the circuit under test with the central office, the client's any connection, while the terminal shorting circuit under test, in the multimeter test sub-menu, select "resistance test" will test the fish folder access lines to be tested, according to < confirm > button to enter into resistance test state, the tester will directly show the ring line resistance, and automatically calculate the line length. Resistance test range: 0 ~ 20KΩ.

Resistance test function can be judged by the length of lines; the other hand, if you know the length of the cable, using the measured resistance value of the connecting cable can determine whether it is normal.

$$L=R_L/R_O \text{ (Km)} \text{ -----} \text{①}$$

$$\text{①: } R_L \text{ (}\Omega\text{)}, R_O \text{ (}\Omega\text{)} \text{ .}$$

For the average plastic telephone communication cables, specifications for the 0.32mm copper RO = 435.2Ω, specifications for the 0.4mm copper RO = 278.5Ω, specifications for the 0.5mm copper RO = 178.3Ω.

If the insulation resistance of over-range line, the tester will display "> 10 MΩ", that line of insulation in good condition.

The test is completed, press "Cancel" button to return to the "main menu state"

5.8.3 Capacitance test

First disconnect the circuit under test with the central office, the client's any connection, while maintaining the line on both ends of the open circuit under test. Then in the multimeter test menu, select "capacitor test" will test the fish folder access lines to be tested, according to <confirm> button, the tester will directly

reflect the line capacitance and line length. Capacitance test range: 0 ~ 1000nF。
Capacitance test feature automatically calculated by the length of line. No bridge taps on the line and no case of flooding, that line through the length of the test capacitor,

$$L = C_{ab} / C_O (\text{Km}) \text{。} \text{-----} \text{②}$$

②: C_{ab} (nF), C_O (nF)。

Φ0.4mm for all commonly used plastic telephone wire communication cable capacitance per kilometer value of $C_O = 51\text{nF}$ 。

The test is completed, press "Cancel" button to return to the main menu state。

Note: If the loop resistance and capacitance of the test after the test, the calculated line length vary widely, there are barriers that line, response line for maintenance. In general, the line loop resistance is too large that there is poor contact of the joint line; line capacitance is too large that line the bridge tap, or soaking wet。

5.9 Charge the battery

The tester built-in capacity 2000mAh rechargeable lithium-ion polymer battery. In turn, the battery capacity of the upper-right corner will display equipment. When the screen shows the battery charge time should be marked as empty, or when the battery voltage drops to a certain extent, the instrument will automatically shut down。

Charging Method: The charge carried with the charger plug into the top left of the charging socket tester, then the charger into 220V AC power outlet. If the charger charge indicator light (and red), then start charging instrument. Charging time is about 6 to 7 hours; when the indicator light on the charger from red to green when the battery is full, you can remove the charger, charging completed。

In order to ensure the accuracy of test results and protection equipment, charge status, please try not to use the equipment for testing。

Product Warranty Cards

Product **Type:** _____
Product Serial Number: _____
Buy **Date:** _____
User **Name:** _____
TEL: _____ **FAX:** _____
Address: _____
Zip Code: _____ **E—mail:** _____
Seal: _____

(Please keep this together, cut the second line and on this basis,
send.)

(Please cut along the dotted line and return the company.)

Product **Type:** _____
Product Serial Number: _____
Buy **Date:** _____
User **Name:** _____
TEL: _____ **FAX:** _____
Address: _____
Zip Code: _____ **E—mail:** _____

Notes:

User should return this part to the Company in a month, when
user purchase the products..Just do that, it's valid.