

TC500 Ethernet Cabling Certifier

Operation Manual

Version 1.14



Deviser Part No.: TC500-DL
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Warranty

This instrument is guaranteed for a period of 2 years since the date of shipment, you can extend the warranty for one year before maturity, to extend the warranty period of one year you need pay 16% of Sales price , the battery warranty for one year. Users should read manual carefully before first use and operate correctly according to the manual.

Deviser shall have no responsibility for any defect or damage caused by improper use and maintenance or for any product which has been repaired or altered by any one others not DEVISER or our authorized service center.

When you need to repair or calibrate the instrument, Please contact Deviser or our local distributors in your country.

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1. Overview

TC500 is an Ethernet cable tester. It is used to certify and test copper cabling up to Class E (ISO/IEC 11801) or Category6 (TIA/EIA-568-B). It has the following features:

- It contains a main unit and a remote unit. When you use it, connect the near end of cable to the main unit and the far end of cable to the remote unit.
- It has a RJ45 connector for testing UTP/STP data cable, an F connector for testing coax, a RJ11 connector for testing telephone cable and two banana jacks for testing 2-wires.
- It has two cabling test standards: International standard ISO/IEC 11801 and American standard TIA/EIA-568-B.
- It certifies Category 5e (Class D) cabling in 35 seconds and certifies Category 6 (Class E) cabling in 66 seconds. It can report PASS/FAIL result and 1000BASE-T capability judgment when an auto test finished. In once auto test, it tests all the items that these two standards required, including: Wire map, Length, Propagation delay, Delay skew, D.C. loop resistance, Insertion loss (attenuation), NEXT (near-end crosstalk), PS NEXT (power-sum NEXT), Return loss, ACR (attenuation to crosstalk ratio at the near end), PS ACR (power-sum ACR-N), ELFEXT (equal level far-end crosstalk), and PS ELFEXT (power-sum ELFEXT).
- It has a function of tone generator. It can help you locate jacks.
- It has two additional functions to help you test Ethernet. One is Ping function. You can use it to ping gateway and any computer in the network. The other function is Ethernet BER test that you can get the BER of 1000 BASE-T, 100BASE-TX or 10BASE-T.
- It can run about 2.5 hours of main unit and 6 hours of remote unit.
- It can store at least 100 results on the flash and can copy these results to the U-disk via USB.
- Toolbox software can help you analysis the results on a PC and generate a report of the result.

2. Warning

- Do not open the instrument without our approval.
- Use only ac adapter approved in the kit for charging this instrument. Using any other adapter/charger may damage the battery. The input voltage of the adapter is 100V-240V (AC only). A larger voltage will damage the instrument.
- Please charge-discharge the battery in every 3 months to extend battery life.

3. Caution

- Never attempt to insert any connector other than an 8-pin modular connector into RJ45 connector.
- Never attempt to insert any connector other than a 6-pin modular connector into RJ11 connector.
- Never connect the tester to an active network unless do network test. Doing so may disrupt network operation.
- This tester does not support PoE test. Do not connect main unit and remote unit to PoE.

4. Basic Features

4.1. Main Unit

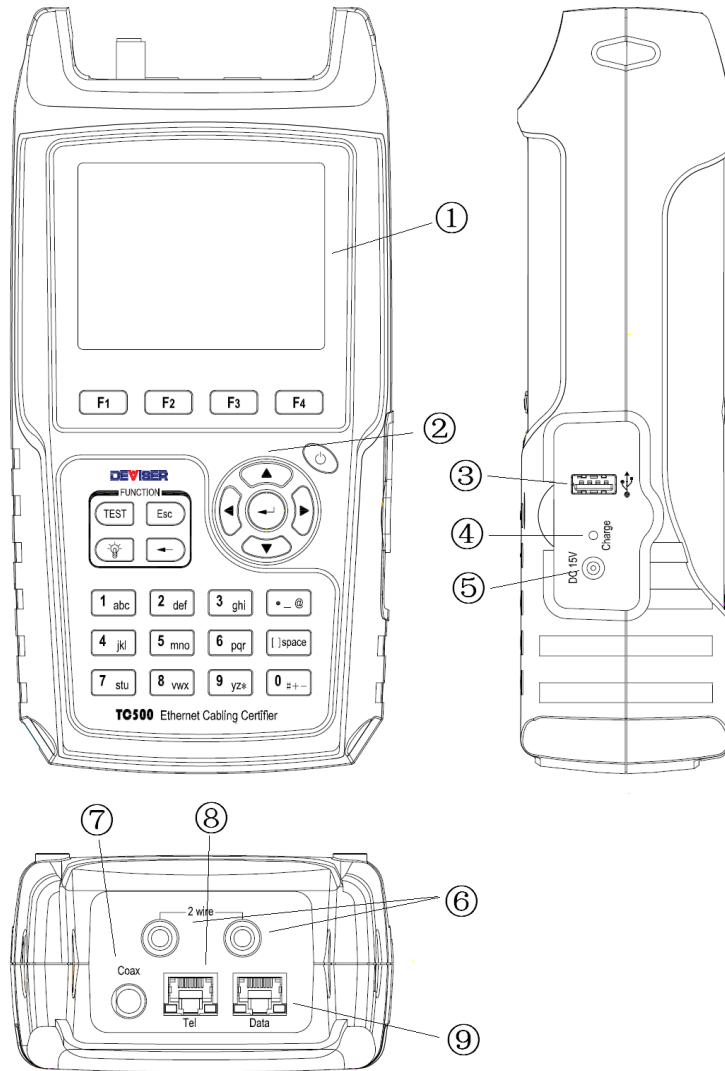











Figure1 Main Unit


- | | | | |
|--|---|------------------------------|----------------|
| ① LCD | ② Key Pad | ③ USB Port | ④ Charging LED |
| ⑤ Connector for the ac adapter | ⑥ Banana jacks---Connect 2-wire cable | ⑦ F connector---Connect coax | |
| ⑧ RJ11 connector---Connect telephone cable | ⑨ RJ45 connector---Connect UTP/STP data cable | | |


4.2. Key Pad


    : Function Keys provide functions related to the soft function keys on the bottom of the current menu.


 : On/Off Key.


    : Arrow Keys are used for navigating through the current menu.

 : Enter Key selects the highlighted item from a menu or the selected function button.

 : TEST Key starts an auto test for the selected cable.

 : Quit Key exits the current menu or item.

 : LCD Backlight Key changes LCD backlight between bright and dim settings.

 : Backspace key deletes the last alphanumeric value when editing job information and some items.



: Alphanumeric keypad. Enter letter and number when editing job information and other items.

4.3. Remote Unit

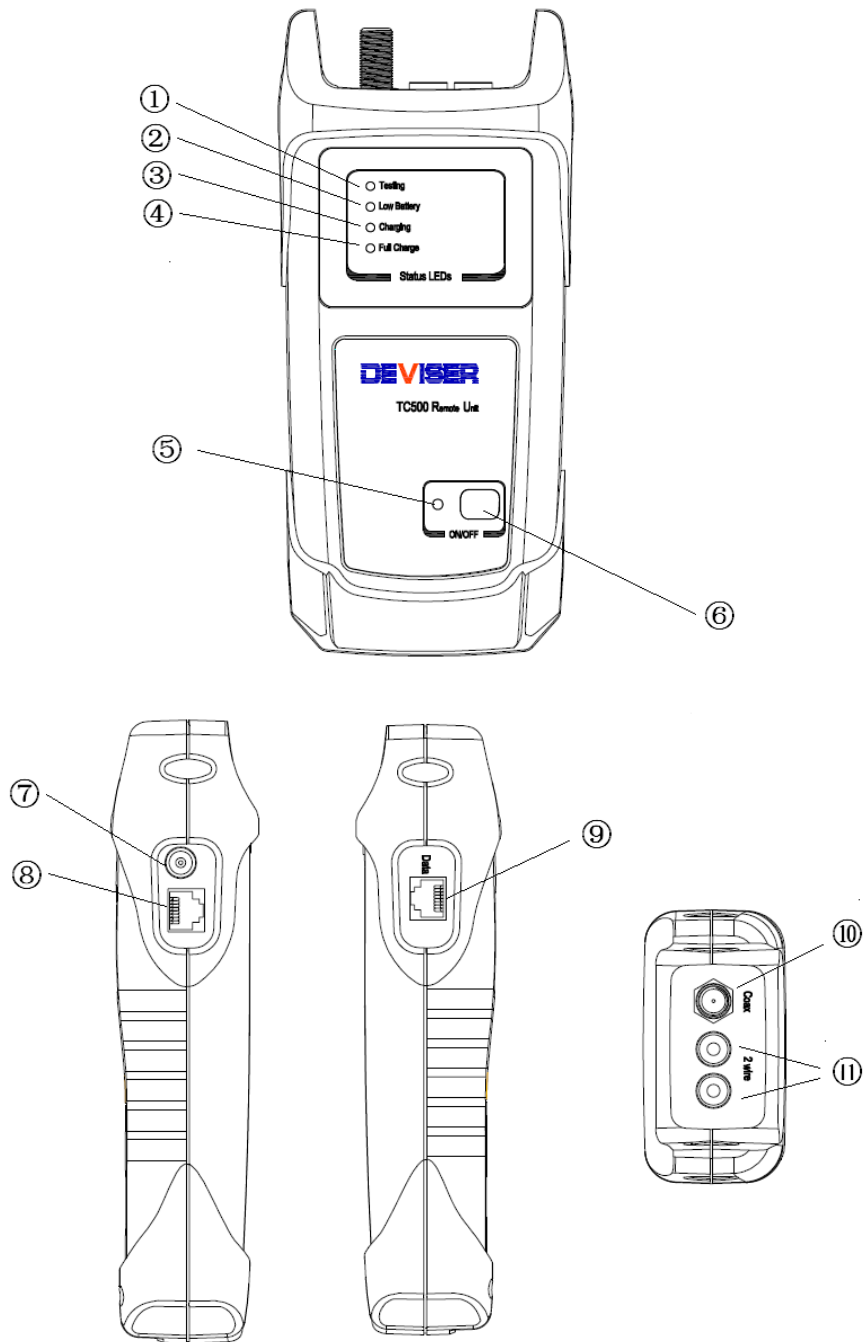


Figure2 Remote Unit

- | | | |
|---|--|----------------|
| ① Testing LED | ② Low Battery LED | ③ Charging LED |
| ④ Full Charge LED | ⑤ On/Off LED | ⑥ On/Off Key |
| ⑦ Connector for the ac adapter | ⑧ RJ11 connector---Connect telephone cable | |
| ⑨ RJ45 connector---Connect UTP/STP data cable | ⑩ F connector---Connect coax | |
| ⑪ Banana jacks---Connect 2-wire cable | | |

4.4. Main Menu

After turn on main unit, you will see a welcome screen, and then the main menu appears.

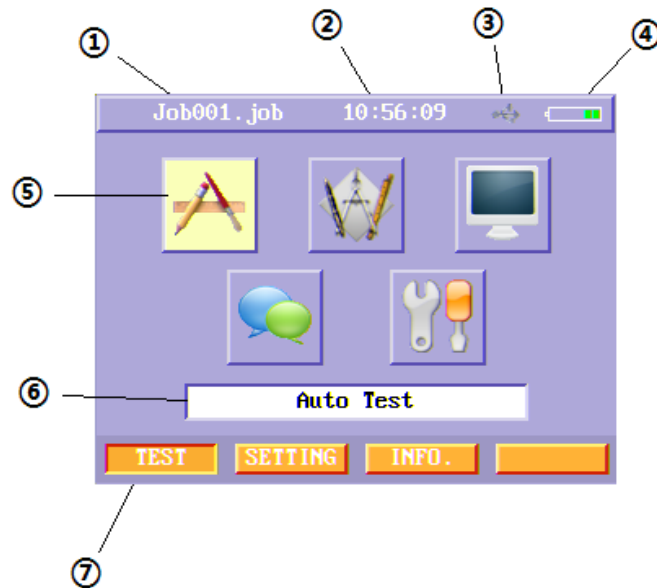


Figure3 Main menu

- ① Job name: Display the current job name.
- ② Current Time: Display current time.
- ③ USB icon: Display current U-disk status.
- ④ Battery status icon: Display battery status, when battery is low, the icon blinks, and the icon rolls when charging.
- ⑤ Function Buttons: Display each function in current menu.
- ⑥ Function Descriptions: Describe the detailed function of the selected function button.
- ⑦ Soft Function Keys: Display the function related to four function keys on the pad.

5. Basic Operation

5.1. Choose a function button

In each menu that contains function buttons, users can select one function button using arrow keys on the key pad. When you press the arrow keys, a highlight box will display among these function buttons in this menu. The function button which the highlight box is on is the selected function button.

5.2. Enter the selected function button

After select a function button, press the enter key on the key pad to enter the selected function.

5.3. Choose a item

The item which is highlighted is the selected item. Users can use up and down arrow key to select different items. After select a wanted item, press enter key to expand this item. Then use up and down arrow key to move among the values of this item. When you select a wanted value for the item, press enter key to ensure.

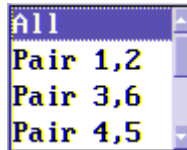


Figure4 Choose an item

5.4. Exit



Users can return to the previous menu using Esc Key on the key pad.

5.5. Select soft function key

To select a soft function key, press the related Function Key (F1, F2, F3, and F4) on the key pad.

6. Settings

The following sections describe how to set the items of this instrument.

In the main menu, press SETTING (F2) soft function key to enter setting menu. Settings have two menus, users can use “Go to Next Page” function button  on the first menu and “Go to Previous Page” function button  on the second menu to change between two settings menus.

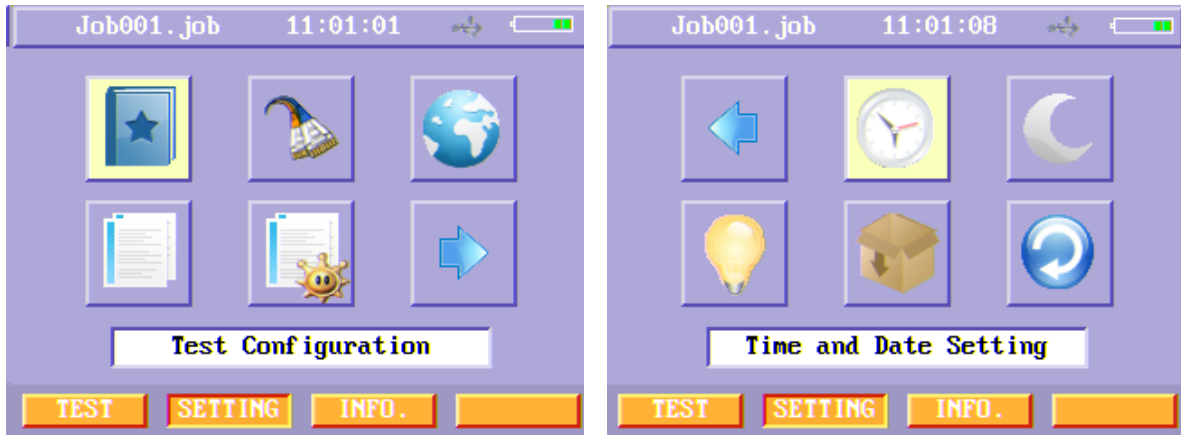


Figure5 SETTING menus

Users can set these items below:

- Test Configuration
- NVP
- Language & Unit
- Job information
- Job Templates
- Time and Date
- LCD/System Power
- LCD Brightness
- Config. Management

6.1. Test Configuration

This instrument supports two test standards: International standard ISO/IEC 11801 and American standard TIA/EIA-568-B. Users can choose one of these two standards when testing UTP/STP cabling. In the second page of setting menu, select Test Configuration function button and press enter key to enter this menu. Press Save (F1) soft key after you choose the standard you want to use.

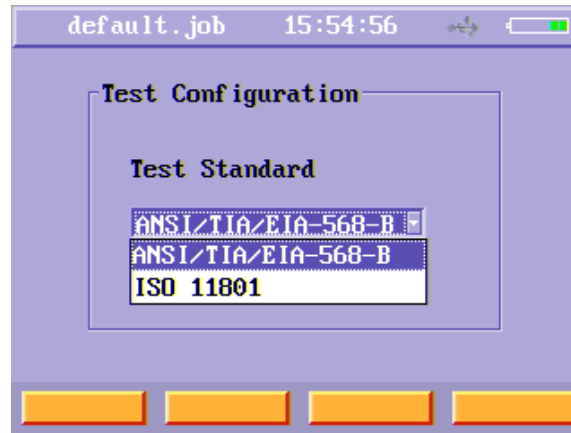


Figure6 Test Configuration menu

6.2. NVP Setting

NVP is Nominal Velocity of Propagation. Users can change NVP of different type of cables in the NVP menu. After enter NVP Setting menu, you will see a list of different type of cables and their NVP. To change their NVP, you just select that type of cable using up and down arrow keys and using enter key to enter the edit mode, then use number keys and backspace key to change it. When you have finished, press Save (F1) soft function key.

Cable Type	NVP
10M	0.69
100M	0.69
1G	0.69
RG-58	0.66
RG-59	0.69
RG-6	0.82
Tel	0.69
Banana	0.69

Figure7 NVP Setting menu

6.3. Language & Unit Setting

Users can choose language and unit in Language & Unit Setting menu. Users can choose Metric unit or Imperial unit, and users can choose English language or Spanish language. Select Language & Unit Setting function button and press enter key, you will enter Language & Unit Setting menu. Press Save (F1) soft function key after you choose the language and unit you want.

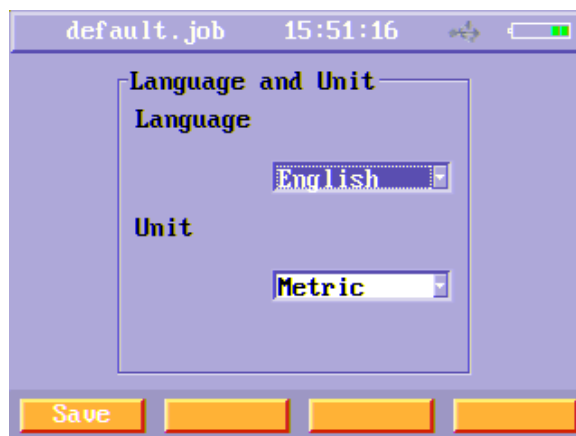


Figure8 Language & Unit Setting menu

6.4. Job information Setting

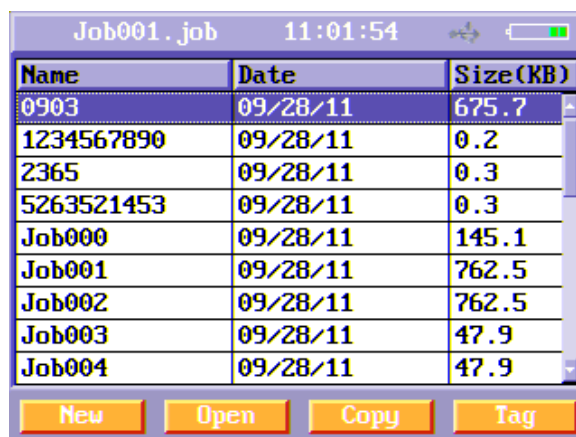


Figure9 Job information setting menu

The Job information Setting menu is used to view a list of all jobs stored in the main unit. It manages the cable files as the following method.

One job is a file folder, and each cable's detailed results are saved as a file. The current job's name is on the title.



The current job's name

Figure10 Job's name on the title

Once the inspector comes to a new site, the inspector creates a new job, and all the cables tested in this site are saved in this job folder as many cable files. Users can set some useful properties for one job folder when you create a new job such as inspector's name, inspector's company, inspector's telephone, site name, site company etc.

In the Job Information Setting menu, press "New"(F1) soft function key to create a new job folder and enter the setting menu of the new job.

Figure11 Setting new job's name menu

In the setting new job's name menu, users can set job name, job template (mentioned in 6.5), Site information and inspector information. Just press "Site Info." or "Inspector Info." function button to enter site information and inspector information menu.

Properties	Contents
Job ID	3521
Company	xxxxxx
Address	yyyyyy
City	
Contact	
Phone	
Email	
Postcode	

At the bottom is a 'Confirm' button.

Figure12 Site information

Properties	Contents
Job ID	8617
Inspector	Jack
Company	
Phone	
Date	

At the bottom are four empty buttons.

Figure13 Inspector information

In these two menus, users can edit some useful information.

After setting the information of a new job, press Save (F1) soft function key to create the new job and you can see the new created job on the job list. But the new created job is not the current job unless you choose it and press Open (F2) soft function key to set it as the current job, and you can see the job name on the title changed.

When users find there is not enough memory space in the instrument, users can copy the job folders to an USB disk and then delete them. Users do this as the following operation. First you should use up and down key to choose one job and press Tag(F4) to tag it on the job list, then press Delete(F1) or To U-disk (F2) to delete this job folder or copy it to USB disk. You can also tag more jobs at once and then delete them or copy them to USB disk.

6.5. Job Templates Setting

When you set the information of a new job, one item is choose template. You can edit inspector information and site information for a job template. When you select a job template when creating a new job, the inspector information and site information are copied to these two pieces of information of the new job created and users do not edit the information for the new job.

6.6. Time and Date Setting

Select Time and Date Setting function button and press enter key, you will enter Time and Date Setting menu.

Select the Year, Month, Day, Hour and Minute using up and down arrow key and enter key , when you finish setting, press Save (F1) soft function key to save time. Then the time on the title will change.

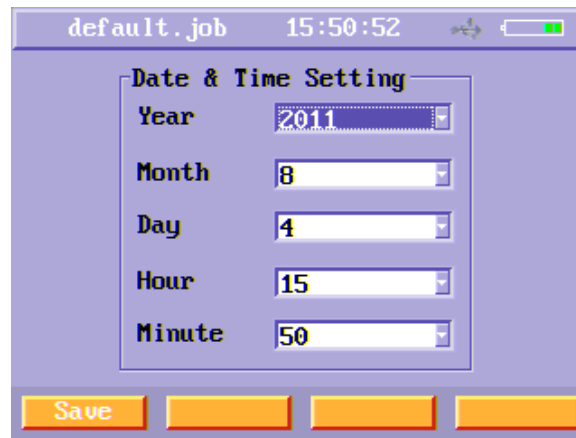


Figure14 Time and Date Setting

6.7. LCD/System Power Setting

If users do not operate the instrument for a period of time, the main unit can shut down LCD backlight or power down automatically for saving power. Select LCD/System Power Setting function button and press enter key, you will enter this menu. Users can set LCD backlight auto-shutdown time and the main unit auto-shutdown time using this menu. Press Save (F1) soft function key to save the timeouts you set.

When LCD backlight shuts down because the timeouts reached, you can turn on LCD backlight just press any key.

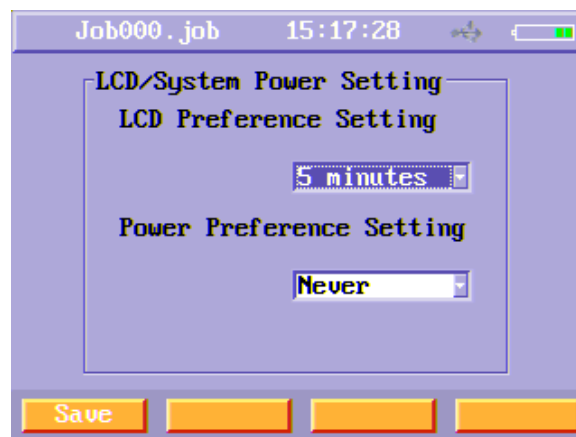


Figure15 LCD/System Power Setting menu

6.8. LCD Brightness Setting

In the second page of setting menu, select LCD Brightness Setting function button and press enter key to enter this menu. Press left or right arrow keys to change the LCD backlight bright. Press Save (F1) soft function key after you choose the bright you want.

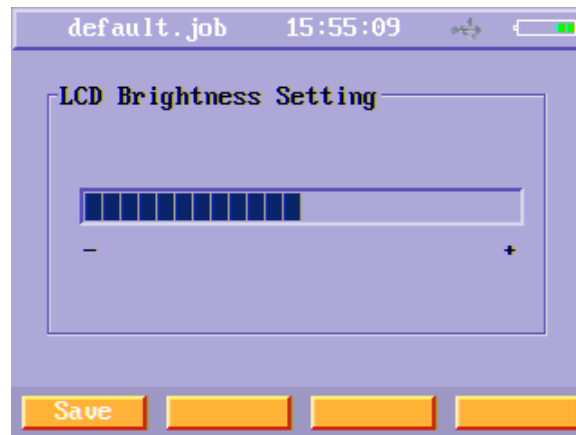


Figure16 LCD Brightness Setting menu

6.9. Config. Management

Users can import and export individual configuration files using this menu. When you finished setting the items of this instrument, you can export the configuration files which save all the setting items you just set. The value of all setting items is saved in the in used configuration file. You can choose another configuration file just choose it and press Open (F2) soft button key. After you choose one configuration file, you can tag it and then export it to U-disk.

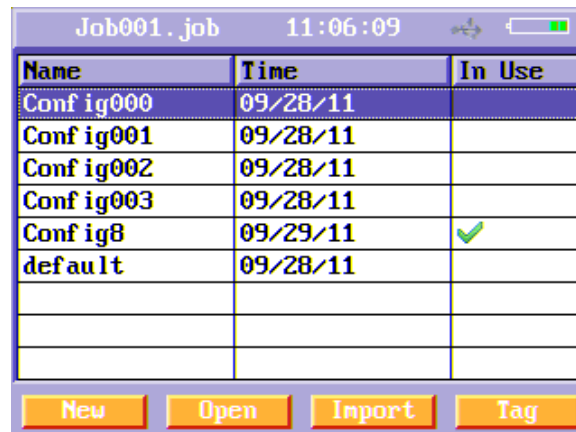


Figure17 Config Management menu

6.10. Default Setting Restore

Users can restore default settings using this menu.

7. Test

The TEST menu has five function buttons: Auto Test, Manual Test, Network Test, Results Comparison and Calibration.

If you use this instrument the first time, you should calibrate its test equipment before test according to 7.6. Users should select the test standard you want according to 6.1.

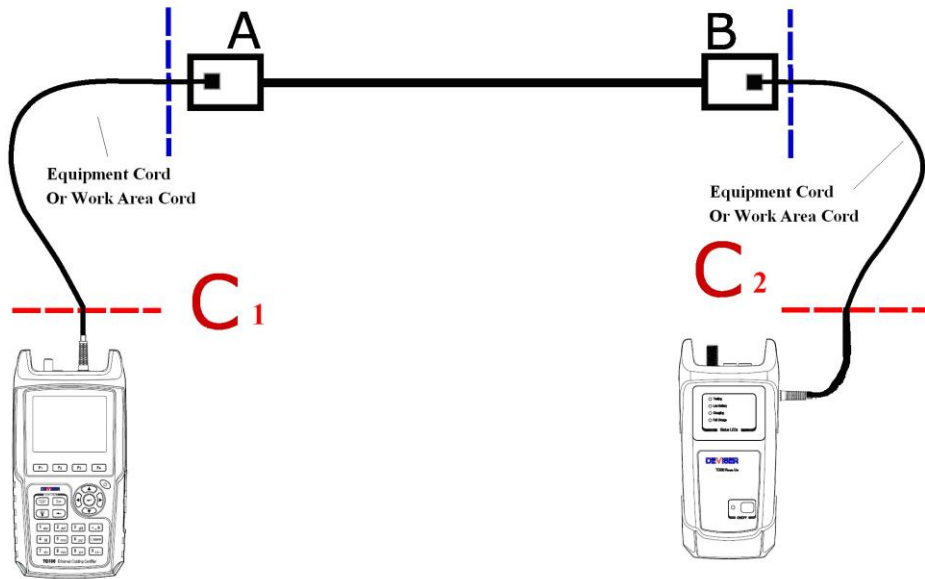


Figure18 Test connections

7.1. Connect instrument to the cable

According to TIA/EIA-568-B or ISO/IEC 11801, there are two transmission paths to be certified: channel and permanent link. When certify permanent link cabling, connect main unit to the near end outlet A using one equipment cord and connect remote unit to the far end outlet B using the other equipment cord (Figure 18). When certify channel cabling, connect main unit to the near end work area cord C1 and connect remote unit to the far end work area cord C2 (Figure 18).

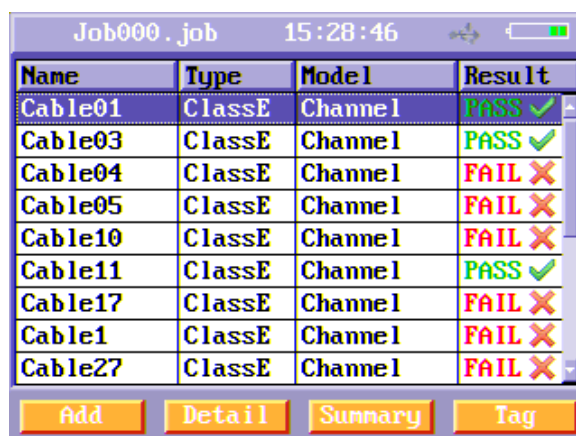
NOTE: In order to extend the service life of RJ45 connector, please connect the RJ45 M-F connector to the RJ45 connector.

7.2. Auto Test

The Auto Test runs some or all of the tests listed below, depending on the selected test limit.

- Wire map
- Length
- Propagation delay
- Delay skew
- d. c. loop resistance
- Insertion loss (attenuation)
- NEXT (near-end crosstalk)
- PS NEXT (power-sum NEXT)
- Return loss
- ACR (attenuation to crosstalk ratio at the near end)
- PS ACR (power-sum ACR-N)
- ELFEXT (equal level far-end crosstalk)
- PS ELFEXT (power-sum ELFEXT)

In the main menu, press “Auto Test” function button to enter Auto Test menu.



Name	Type	Model	Result
Cable01	ClassE	Channel	PASS ✓
Cable03	ClassE	Channel	PASS ✓
Cable04	ClassE	Channel	FAIL ✗
Cable05	ClassE	Channel	FAIL ✗
Cable10	ClassE	Channel	FAIL ✗
Cable11	ClassE	Channel	PASS ✓
Cable17	ClassE	Channel	FAIL ✗
Cable1	ClassE	Channel	FAIL ✗
Cable27	ClassE	Channel	FAIL ✗

Buttons: Add, Detail, Summary, Tag

Figure19 Auto Test menu

In Auto Test menu, there is a list of cables in the current job folder. To test a new cable, press Add soft function key. Then a new cable appears.



Figure20 Add a new cable

- Name: The Cable ID that will be tested. Users can edit it using alphanumeric keypad.
- Type: The Cable type that will be tested. These types include CAT3 (UTP/STP), CAT5e (UTP/STP), CAT6 (UTP/STP), Class C (UTP/STP), Class D (UTP/STP), Class E (UTP/STP), RG-58 (coax), RG-59 (coax), RG-6 (coax), TEL (telephone line) and Banana.

The test standard and its according cable type of UTP/STP is shown in Table 1.

Table 1 Cable Type and according Standard

Test Standard	Cable Type of UTP/STP
TIA/EIA-568-B	Cat 3, Cat 5e, Cat 6
ISO/IEC 11801	Class C, Class D, Class E

- Model: Users can choose two transmission paths: channel and permanent link. When the model is chosen, the according test limit is used to this cabling.
- Result: show test result, pass or fail.

After setting the cable name, type and model, press TEST key on the key pad to run an auto test.

After pressing TEST key on the key pad, the Auto Test menu appears. The scroll bar on the bottom of Auto Test menu grows with the process of auto test. When the scroll bar shows 100%, auto test completed and a PASS/FAIL result appears for one second. Users can observe the result of Wire map and length in TDR menu; propagation delay and delay skew in Delay menu; d. c. loop resistance in the R menu and all RF test items in RF menu.

After auto test is done, the detailed results of this cable are saved automatically in the current job folder.



Figure21 PASS/FAIL information

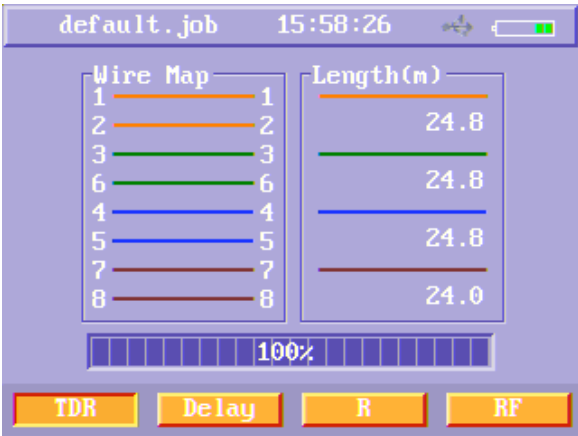


Figure22 Auto test TDR results menu

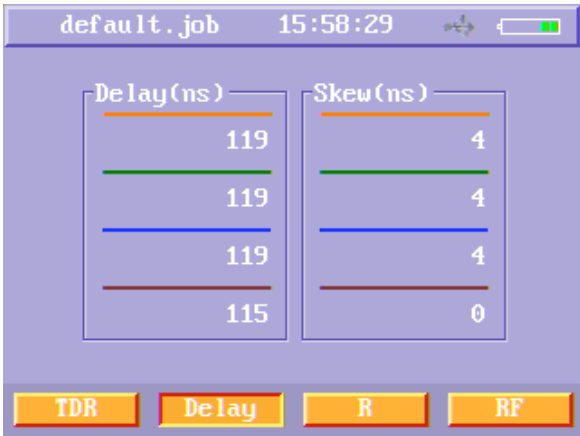


Figure23 Auto test Delay results menu



Figure24 Auto test d. c. loop resistance results menu

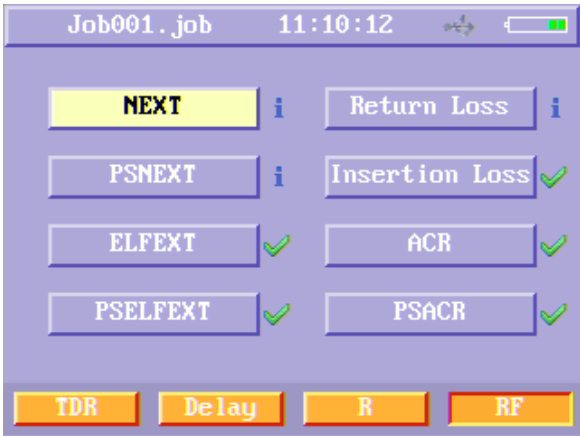


Figure 25 Auto test RF results menu

In the RF menu, users can select each RF item to observe the detailed result. The following example is a menu when you enter NEXT item. The frequency and value shown on the bottom of the menu is the current frequency of the cursor and the first pair's value. Users can move the cursor using left and right arrow keys. Also, users can use enter, up and down key to choose one pair to observe.

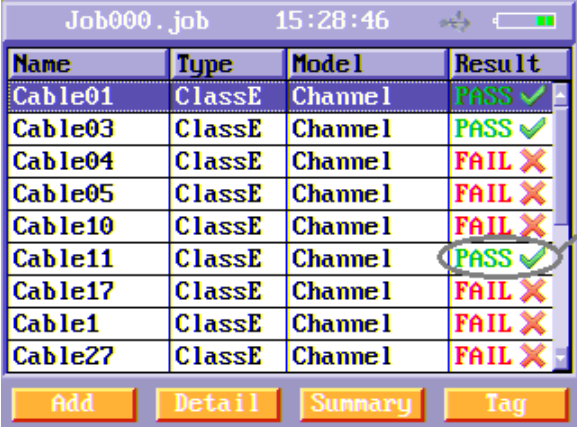


Figure26 Auto test NEXT results menu



Figure27 Each pair of auto test NEXT results menu

Press Esc key to quit to the list of cables menu when auto test finished. And the Result bar of this cable shows the PASS/FAIL result of this cable.

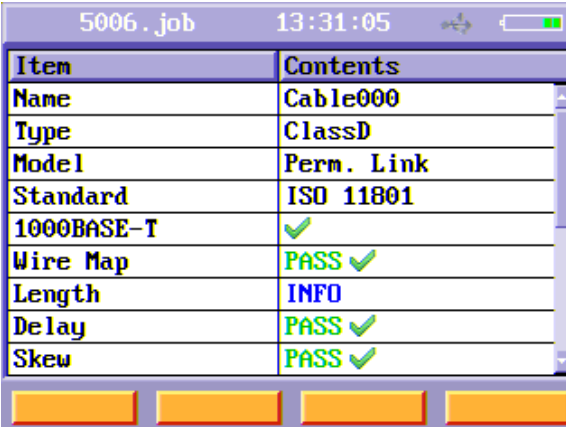


Name	Type	Model	Result
Cable01	ClassE	Channel	PASS ✓
Cable03	ClassE	Channel	PASS ✓
Cable04	ClassE	Channel	FAIL ✗
Cable05	ClassE	Channel	FAIL ✗
Cable10	ClassE	Channel	FAIL ✗
Cable11	ClassE	Channel	PASS ✓
Cable17	ClassE	Channel	FAIL ✗
Cable1	ClassE	Channel	FAIL ✗
Cable27	ClassE	Channel	FAIL ✗

Buttons: Add, Detail, Summary, Tag

Figure28 Auto test result

In the list of cables menu, you can choose one cable using up and down arrow keys and after you choose one cable, you can press Detail (F2) soft button key or Summary (F3) soft button key to observe the detailed or the summary results of this cable. After you choose one cable, you can press Tag (F4) soft button key to tag it and then you can delete it's result or copy it's result to U-disk just press Delete (F1) or To USB disk (F2). You can also tag more cable results and delete or copy to U-disk together.



Item	Contents
Name	Cable000
Type	ClassD
Model	Perm. Link
Standard	ISO 11801
1000BASE-T	✓
Wire Map	PASS ✓
Length	INFO
Delay	PASS ✓
Skew	PASS ✓

Buttons: (Four unlabeled buttons)

Figure29 Auto test summary results menu

7.3. Manual Test

Manual Test provides individual test for each items in auto test. Users use manual test for test one or more items to observe. Manual test just provide the test result and does not provide a PASS/FAIL conclusion. Additional, manual test provides two other test items that auto test does not have BER test and TONE.

Manual test provides different test items according to different cable type. Table 2 shows the cable types and associated test items in manual test.

Table 2 Test Items for different cable types

Cable Type	Test Items
Data cable (Cat3,5e,6 ; Class C,D,E UTP/STP)	Standard Test: Wire map, length, propagation delay, delay skew, d. c. loop resistance, NEXT, Return Loss, Insertion Loss, PS NEXT, ELFEXT, PS ELFEXT, ACR, PS ACR
	BER Test
	TONE
Phone cable	TDR Test: Wire map, length
	TONE
Coax, Banana	TDR Test: Wire map, length
	TONE

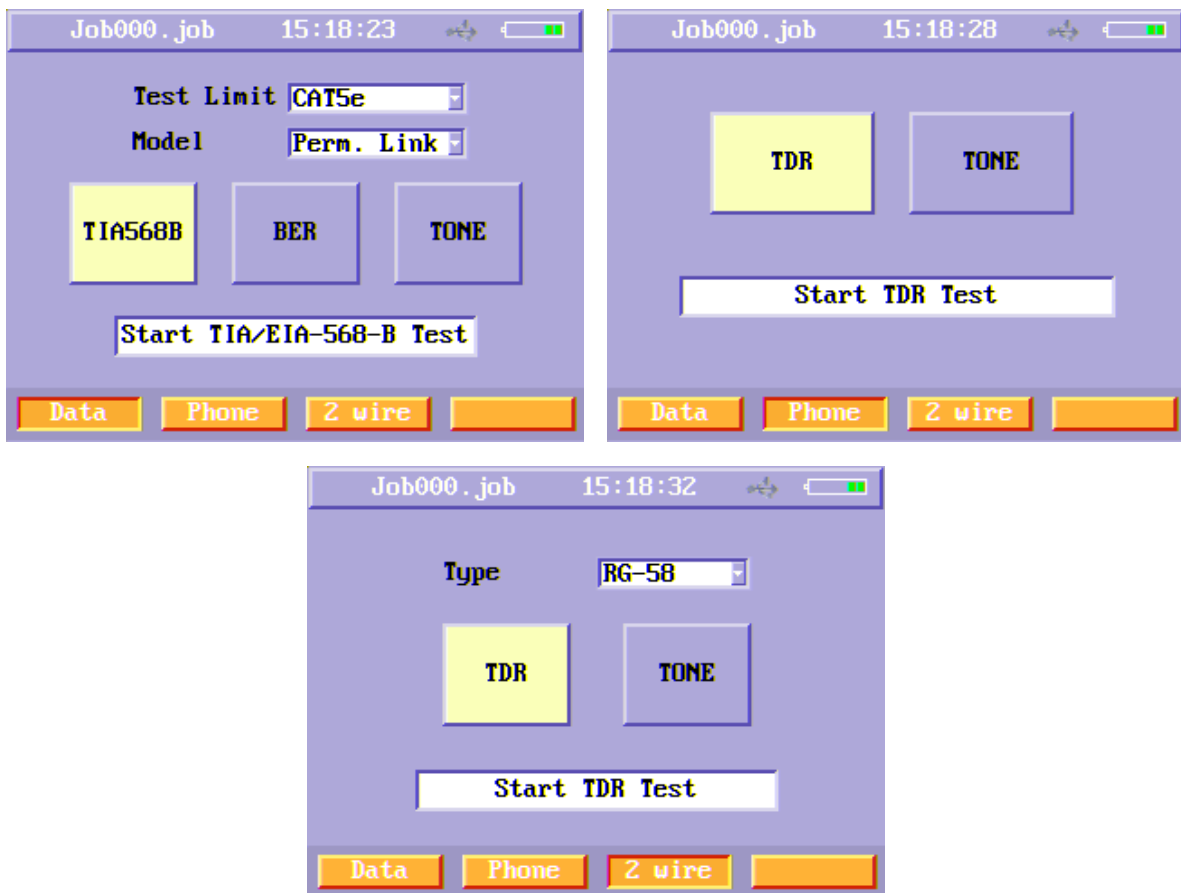


Figure30 Manual Test menus

1. Data cable

Turn on main unit and remote unit and then connect the UTP/STP cable tested to these two units, you can run data cable manual test.

● Standard Test

If you test UTP/STP, you just choose data cable manual test menu.

In this menu, you first choose Test limit and model. Test Limit changes according to the test standard you choose in the “Test Configuration” setting menu. Table 3 shows it.

Table3 Test Limit and according Test Standard

Test Standard	Test Limit
TIA/EIA-568-B	Cat 3, Cat 5e, Cat 6
ISO/IEC 11801	Class C, Class D, Class E

After you choose Test Limit and Model, press “TIA568B” or “ISO11801” (according to the test standard you choose) function button to do individual standard test.

After you press “TIA568B” or “ISO11801” function button, the instrument will do wire map and length test first and TDR manual test menu appears.

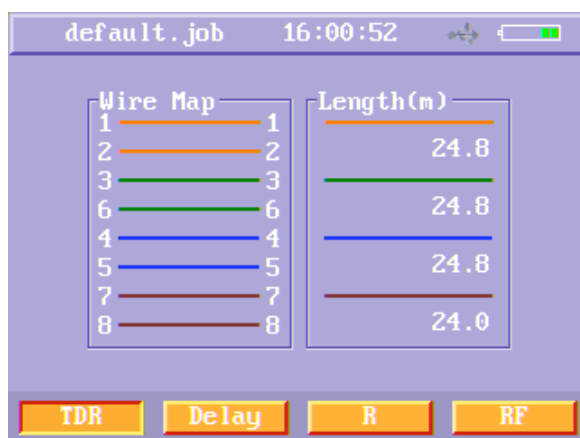


Figure31 Data cable TDR manual test results menu (TDR OK)

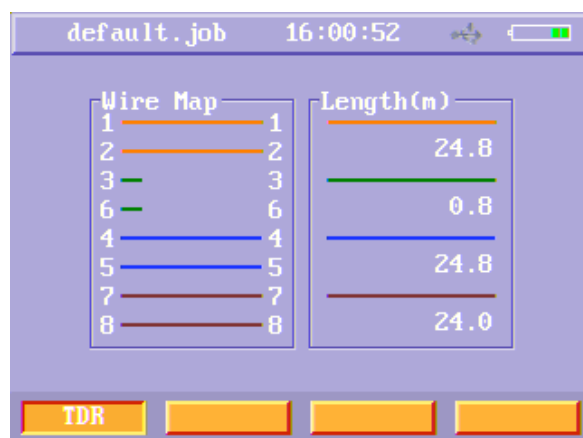


Figure32 Data cable TDR manual test results menu (TDR Wrong)

If the wire map is OK, you can press Delay (F2), R (F3) and RF (F4) soft function keys to do according manual test. When the wire map is not correct, you can't test the other items.

When you press Delay (F2) soft function key, the instrument will test the propagation delay and delay skew and enters the Delay menu.

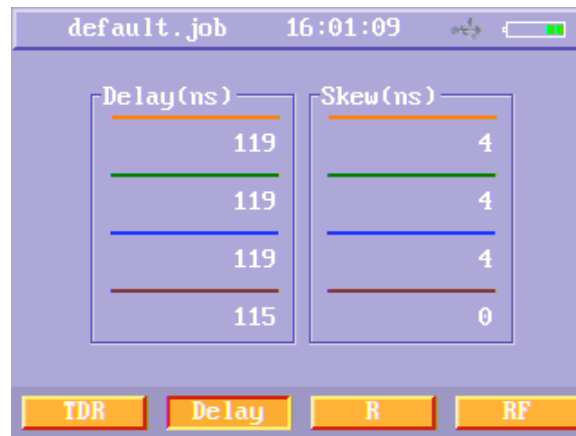


Figure 33 Data cable delay manual test results menu

When you press R (F3) soft function key, the instrument will test d. c. loop resistance and enters the R menu.

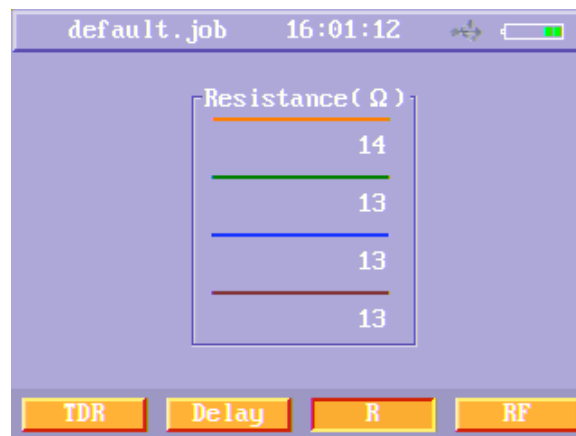


Figure 34 Data cable d. c. loop resistance manual test result menu

When you press RF (F4) soft function key, the instrument will enter the RF test menu.

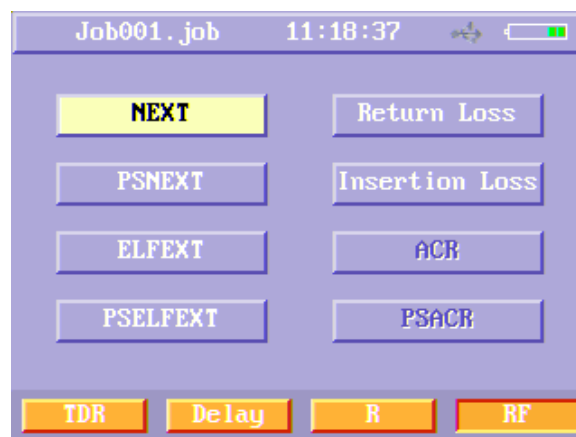


Figure 35 RF manual test menu

Users can use arrow keys to choose a RF item and press enter key to do that RF item's testing. Figure 36 shows a NEXT test menu. You can check the NEXT value of different frequencies just move the cursor using left and right arrow keys.



Figure36 Data cable NEXT manual test result menu

● BER Test

BER test is only for DATA cable (UTP/STP). BER test can test on MAC layer of 10base-T, 100BASE-TX or 1000BASE-T according to IEEE802.3. The speed you want to test according to the test limit you choose.

Table 4 BER test speed and Test Limit

Test Limit	PHY Speed
Cat3/Class C	10BASE-T 10Mbps
Cat5e/Class D	100BASE-TX 100Mbps
Cat6/Class E	1000BASE-T 1000Mbps

In order to run the BER test, turn on main unit and remote unit, then connect main unit to near end of the UTP/STP and connect remote unit to far end of the UTP/STP. In Data cable manual test menu, after choose a Test Limit select the BER function button and press enter key to enter the BER test menu.



Figure37 Data cable BER test menu

Then main unit and remote unit start testing BER. In the BER test menu, “Send frames” item indicates the number of frames has been sent. “Error frames” item indicates the number of error frames has been received. When the BER test finishes, the progress bar displays 100%.

Note: If the wire map of the UTP/STP under test is not correct, a message box will display “Wire map is error or the remote unit not exists” and the BER test can’t run.

If the inspector disconnects the instrument from the UTP/STP when the BER is testing, the main unit will display “The remote unit link down”.



Figure38 Data cable BER test menu (error)

● TONE

When do TONE test, users just connect main unit to the cable, and do not use remote unit. When run TONE test, main unit sends TONE sound on the pair you want.

- 1) Select TONE function button to enter TONE menu.



Figure39 Data cable TONE test menu

- 2) Select the desired Tone Sound, Tone Path and Autostop Time. Press Start (F1) soft function key to start the tone.

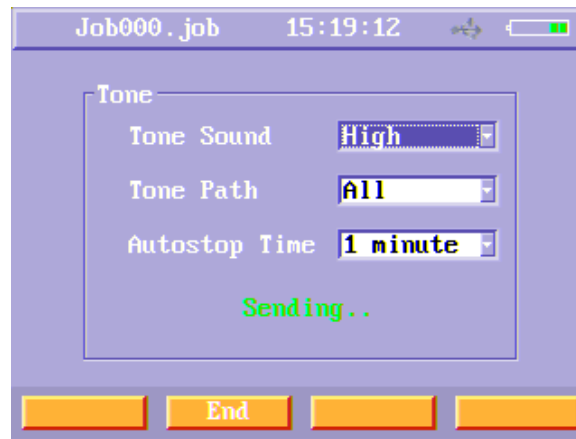


Figure40 Data cable TONE sending menu

- 3) When sound is sending, you can stop TONE just press End (F2) soft function key or wait the sound auto stop.

2. Phone cable

Turn on main unit and remote unit and then connect the phone cable tested to these two units, you can run phone cable manual test.

- **TDR Test**

In phone cable manual test menu, press “TDR” function button to run a TDR test for the phone cable. The wire map and length will be tested.

- **TONE**

Press “TONE” function button to run a TONE test. The operation steps are similar to data cable.

- **2-wire cable**

Turn on main unit and remote unit and then connect the coax cable or 2-wire cable tested to these two units, you can run 2-wire cable manual test.

- **TDR Test**

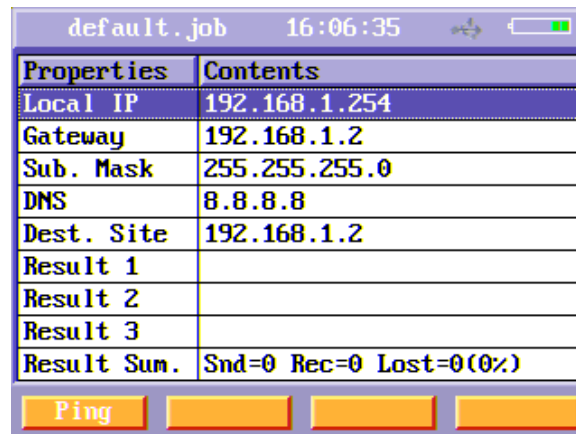
In 2-wire cable manual test menu, press “TDR” function button to run a TDR test for the 2-wire cable. The wire map and length will be tested.

- **TONE**

Press “TONE” function button to run a TONE test. The operation steps are like in data cable.

7.4. Network Test

Users can ping the network using main unit in Network test. The ping test verifies connectivity to devices on the network. When running ping test, you just connect the main unit to the network using an UTP/STP cable. Remote unit is not used in ping test.



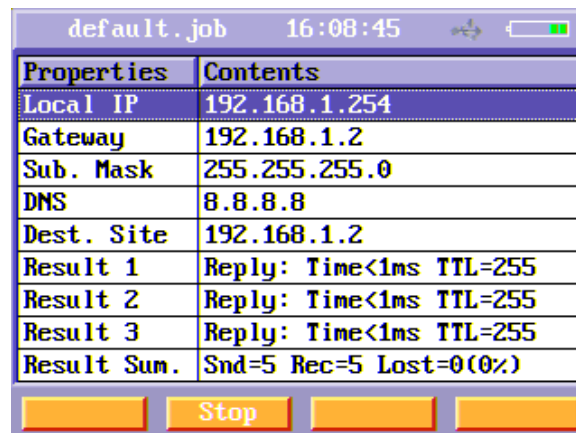
The screenshot shows a handheld device screen with a status bar at the top displaying 'default.job' and '16:06:35'. Below the status bar is a table with two columns: 'Properties' and 'Contents'. The table contains the following rows:

Properties	Contents
Local IP	192.168.1.254
Gateway	192.168.1.2
Sub. Mask	255.255.255.0
DNS	8.8.8.8
Dest. Site	192.168.1.2
Result 1	
Result 2	
Result 3	
Result Sum.	Snd=0 Rec=0 Lost=0(0%)

Below the table is a row of four buttons. The first button is labeled 'Ping' and is highlighted in orange. The other three buttons are empty.

Figure41 Network test menu

In the Network test menu, edit the Local IP, Gateway, Sub. Mask, DNS and Destination Site using alphanumeric keypad. Press Ping (F1) soft function key and ping test starts. The ping results are shown on Result1, Result2, Result3 and Result Sum.



The screenshot shows the same handheld device screen as Figure 41, but now the 'Ping' button has been pressed. The 'Result 1', 'Result 2', and 'Result 3' fields now contain the following text:

Properties	Contents
Local IP	192.168.1.254
Gateway	192.168.1.2
Sub. Mask	255.255.255.0
DNS	8.8.8.8
Dest. Site	192.168.1.2
Result 1	Reply: Time<1ms TTL=255
Result 2	Reply: Time<1ms TTL=255
Result 3	Reply: Time<1ms TTL=255
Result Sum.	Snd=5 Rec=5 Lost=0(0%)

Below the table is a row of four buttons. The first button is empty, the second button is labeled 'Stop' and is highlighted in orange, and the other two buttons are empty.

Figure42 Ping result

7.5. Results Comparison

Users can compare two cables' summary results using this menu.

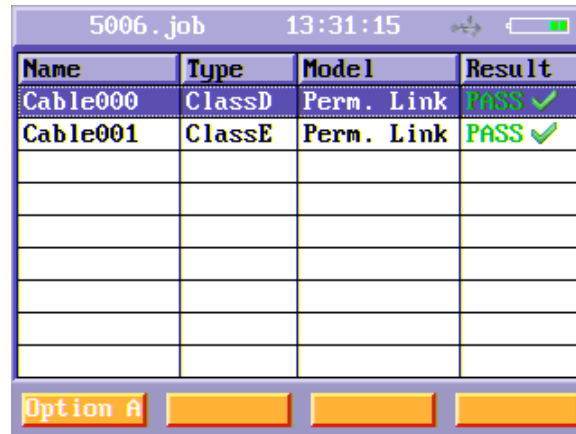


Figure43 Select one cable

Use up and down arrow keys to choose one cable, then press Option A (F1) soft function key to select the first one.

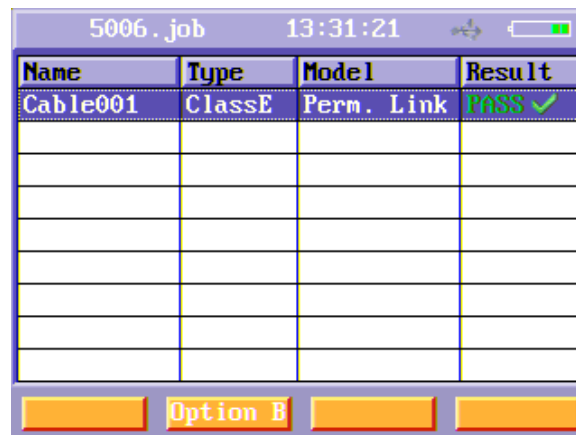


Figure44 Select another cable

Then use up and down arrow keys to choose another cable and press Option B (F2) soft function key to select the second one. Then the comparison menu appears.

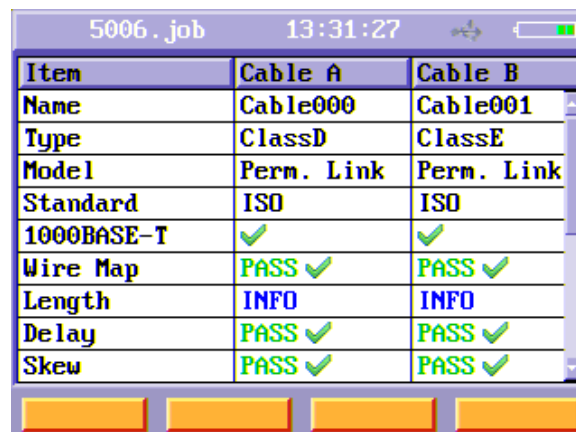


Figure45 Comparison menu

7.6. Calibration

The calibration procedure is performed to set a reference for cable testing. Before you certify the cabling, you should do once calibration and you do not do another calibration unless you change the two equipment cords for testing permanent link.

After entered calibration menu, you will see two function buttons, one is for channel calibration, the other is for permanent link calibration.

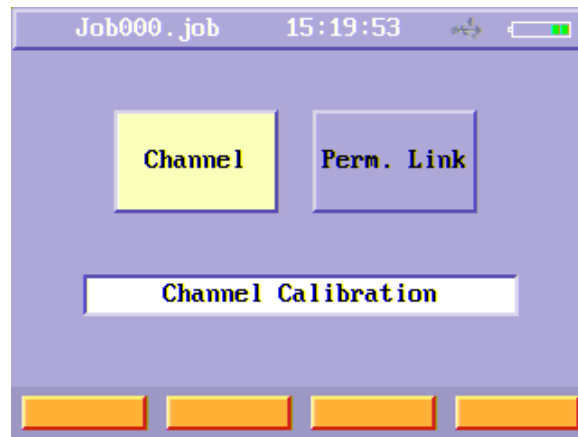


Figure 46 Calibration menu

For channel calibration, you just do not connect any equipment cord to the main unit and remote unit. Then press “Channel” function button to run a channel calibration.

For permanent link calibration, after press “Perm. Link” function button, turn on remote unit and connect the first equipment cord with two units, then press any key. After the first cord calibrated, connect the second cord with two units and press any key.

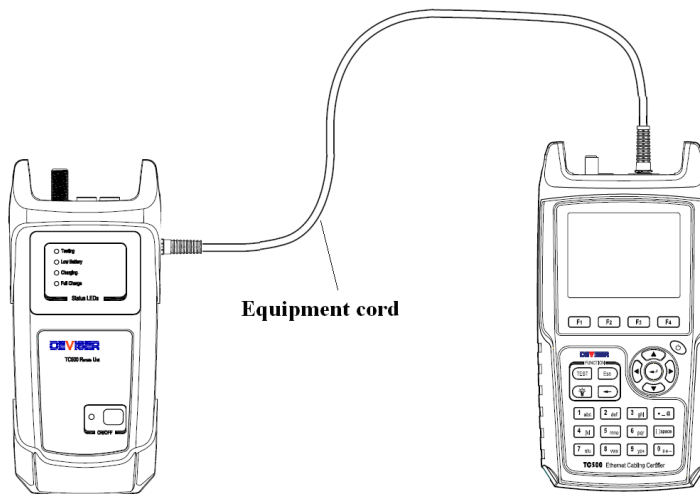


Figure47 Calibration connection

WARNING: If you do not run a permanent link calibration after you change the equipment cords, the length result and RF results may be not correct.

8. Information

In the main menu, press “INFO.” (F3) soft function key to enter Information menu. Users can check these kinds of information below in Information menu:

- Serial Number
- Previous Calibration Date
- Time and Date
- Remaining Memory
- Battery Information
- Support Information



Figure48 Information menu

8.1. Serial Number

When enter Serial Number information menu, users can see the instrument's serial number and the version levels of OS Kernel, Software and firmware.

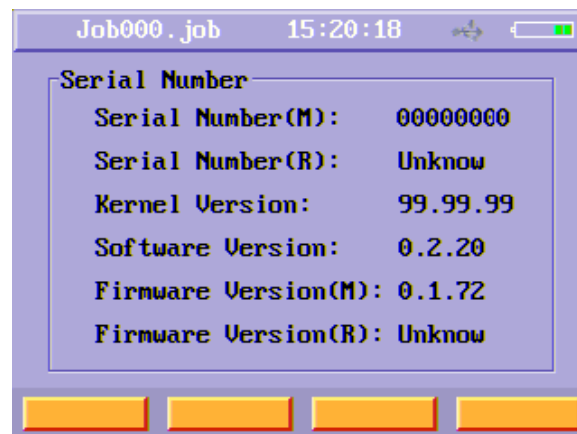


Figure49 Serial Number information menu

8.2. Previous Calibration Date

This menu shows you the last calibration date. If you use the same equipment cords for certifying every permanent link cabling, you just calibrate the instrument every 30 days.

8.3. Time and Date

This menu shows the current date and time the instrument saved.

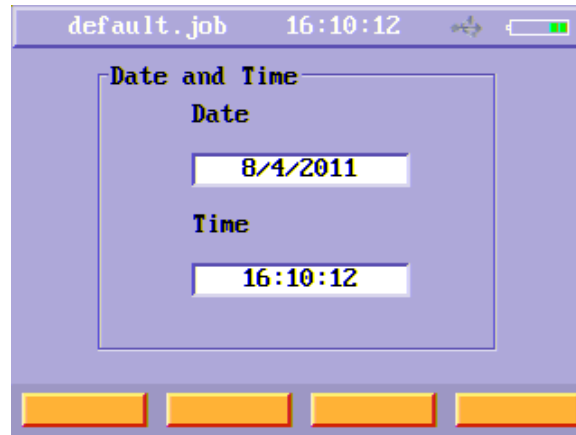


Figure50 Date and Time information menu

8.4. Remaining Memory

This menu shows the remaining memory that can be used to save cable files.

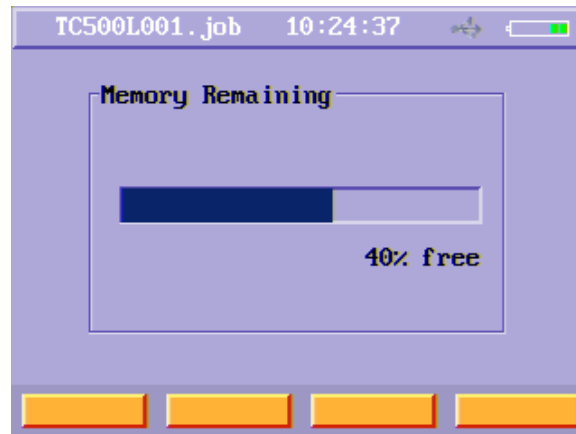


Figure51 Remaining memory information menu

8.5. Battery Information

This menu shows you the remaining power of battery in main unit and the charging status of the main unit.

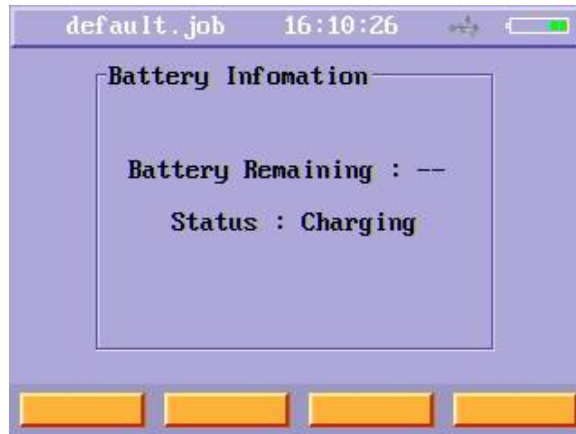


Figure52 Battery information menu

8.6. Support Information

This menu shows Technical Support contact information, including our web site, email and telephone.

9. Download Jobs to PC software

Users can observe the test results on a PC using PC Toolbox.

In order to observe test results using toolbox, first you should download the jobs to a U-disk from main unit according to 6.4. Then copy the job cable files to PC from the U-disk, run toolbox and you can observe these results on a PC.

10.Charge

When the power of main unit battery is low, the battery status icon on every menu will blink, users should connect the AC adapter to the AC adapter connector of the main unit. The Charging LED will be on when charging. It will take about 5 hours to charge main unit full.

When the power of remote unit battery is low, the Low Battery LED will be on, users should connect the AC adapter to the AC adapter connector of the remote unit. The Charging LED will be on when charging. It will take about 5 hours to charge remote unit full.

The main unit and remote unit will automatically shut down when the power of battery is low enough.

11.Update

Users can update OS kernel, main unit firmware, main unit software and remote unit firmware just using a U-disk.

If you update main unit OS kernel, main unit firmware, main unit software, you just copy the update file to a U-disk. Before turn on the main unit, connect the U-disk to main unit and press On/Off key. The main unit will automatically find the update file and then run the update process.

A message box will appear to show you the update process is running. When this process finished, the message box disappeared and main unit will automatically shut down.

If you update remote unit firmware, first you should copy the update file to a U-disk. Turn on the main unit and remote unit; connect the remote unit to the main unit using one equipment cord. Connect the U-disk to the main unit and turn on main unit, and go to the Serial Number menu in Info. Then the update process runs, a message box will appear on main unit. When the process finished, the remote automatically shut down.

WARNING:

Do not take the battery out of main unit and remote unit when update process is under run.

Do not disconnect the U-disk from main unit when update process is under run.

To update successfully, users should be sure the units have enough power and flash free space.

12. Appendix

Specifications	
Length	
Range:	0 to 176 m (UTP) ; 0 to 200 m (Coax)
Resolution:	0.1 m
Accuracy:	± 1.5 m
Propagation Delay	
Range:	0 to 850 ns
Resolution:	1 ns
Accuracy:	± 7 ns
Delay Skew	
Range:	0 to 100 ns
Resolution:	1 ns
Accuracy:	± 15 ns
DC Resistance	
Range:	0 to 100 Ohms
Resolution:	1 Ohms
Accuracy:	± 2 Ohms
RF Frequency	
Range:	1 to 250 MHz
Resolution:	NEXT, Return Loss, ELFEXT 1 to 31.25 MHz: 150 kHz
RF Items	
Range:	
NEXT:	0 to 70 dB
Insertion Loss:	0 to 40 dB
Resolution:	0.1 dB
Accuracy:	
Insertion Loss:	± 2 dB
Auto Tests	
Channel and Permanent Link	
Manual Tests	Single Autotest Item, 10/100/1000 BASE-T BER, TONE
Network Tests	Ping
Display	3.5 inch 16M color LCD
Working Condition	
Temperature:	-10 to +50 °C
Storage Condition	
Temperature:	-20 to +60 °C
Weight	
Main unit:	0.79 kg
Remote unit:	0.35 kg
Dimensions	
Main unit(H×W×D):	222×108×57 mm
Remote unit(H×W×D):	184×83×44 mm

Standard Accessories

Standard Accessories	Quantity
Main unit with lithium-ion battery	1
Remote unit with lithium-ion battery	1
equipment cords for testing permanent link	2
RJ45 M-F connectors	2
AC adapters	2
Manual and Toolbox software CD	1
Carrying bag	1



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