BER-1530

Data Transmission Analyzer

User's Manual

V2.0

DADI Telecom

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Safety matters

In the whole test process, please comply with common. safety prevent norms. If you use the tester without this user manual, and the tester is damaged, DADI Telecom won't undertake any responsibility. Please be sure to obey the following safety norms, lest cause bodily injury or tester damage.

Warning

Battery charging

Charging the battery must use the charger from the manufacturer. You can't use any unauthorized charger, lest cause tester damage or accident.

Battery replacement

Please use the manufacturer configured Li batteries. You can't operate the tester in inflammable or explosive environment. Do not use the tester in environment with inflammable or explosive liquid or steam. In this environment, it will be dangerous with any electrical instruments.

Open rear cover

Unless you want to replace modules, please don't open rear cover or bottom cover. The replace must be operated by formal trained stuff. There is high voltage in some areas inside the tester which will cause dangerous if it is mishandled.

LCD

If the LCD is damaged and liquid outflows, please don't inhaled it into mouth or splash on skin. If the liquid is splashed into eye or mouth, please immediately rinse with water and go to the hospital; if the liquid is splashed on skin or clothes, please wipe with alcohol firstly, and then wash with soap and water. In addition, take care, don't be scratched by glass fragments, don't touch the border of glass fragments.

Catalogue

Chapter 1 General

BER-1530 Data Transmission Analyzer is the latest compact handheld tester. With large touch screen TFT color LCD, and built-in rechargeable Li-ion battery. It can be for E1/2M on-line monitoring as well as BER test from 50b/s to 2048kb/s, which is the necessary tool for network equipment installation, troubleshooting and maintenance.

Function

- TX/RX of the frame and unframed signal
- Support the termination, monitoring and bridged
- Bit, Code, FAS, CRC error injection and detection
- Frame, Signaling, time slot data viewing
- ITU-T G.821/G.826/M2100 error analysis
- Loopback delay and Switching time test
- Voice & Frequency Measurement
- V Series Port Test
- Test result histogram display
- Save the details of error and alarm for more than 5000 times
- Test records can be transferred to PC by USB
- Large capacity Li-ion battery guarantees more than 8 hours' working without external power supply.

Chapter 2 Inspection

It's absolutely necessary for you to read inspections before unpack package and check the instrument or test. In this chapter, we would like to help you know the initial work status of the instrument.

2.1 Unpack the Instrument

Before unpacking, please check whether there is any damage in the carton and the bag. If any, please sort all of the articles per the packing list.

In case that damaged bag or incomplete articles happen or the instrument cannot achieve function tests, please contact us immediately.

2.2 Accessory and Option

Accessories to the instrument, please refer to the packing list. If received articles are not the same with what is specified in the packing list, please inform us immediately so as not to make any influence on using.

2.3 Power Supply

The instrument supports two power supply modes, DC and battery, with a built-in large capacity rechargeable lithium battery for 8-hour long consecutive operation after being fully charged.

When using external power supply, the battery will charge automatically with the battery capacity shown on the right top corner

of LCD of the instrument at any moment.

When using AC power, please use the AC charger accompanied, or the instrument will be damaged.

Precautions:

! Don't dispose wasted battery in water or fire for fear of backfire or pollution.

! Don't make the two poles of the battery in short circuit for fear of dangers.

! Don't make battery close to fire source or use in high temperature for fear of severe personal injury.

Chapter 3 Tester Configuration

3.1 Front View

3.1.1 LEDs

Specifications of the LEDs as follows:

Name	Meaning
LOS	Loss of signal
AIS	AIS signal have been found
LOF/LOP	Loss of frame or Loss of pattern
RDI	RDI have been found
ERR	Error have been found
Power	Tester at power on status

If the alarm or ERR LED Continuous light, it shows that alarm or error always be found; If the LED flashes, it shows that alarm or error has be found but without confirm. You can click the “Hist” to clean the history records.

3.1.2 Buttons

- Power button: Press the button to power on the tester. When the tester is open, if continuously Press the button for 1 second the shutdown dialogue box will pop up, the user clicks “ok” to close the tester. If the tester can not be closed by the related system icon, Press the power on/off button for about 5 second to shut off the power of the tester.
- Soft keyboard key: press it to recall soft keyboard on the display bottom or close it.

3.2 Top Panel

3.2.1 Power Adapter Plug

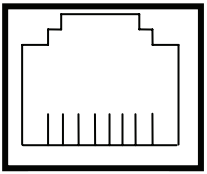
Specific power adapter: Input 50Hz AC 220V (Tolerance range is ±10%), output DC 8.4V.

3.2.2 E1 Unbalanced Port

Unbalanced port (75Ω) for E1 output (TX).Unbalanced port (75Ω/high impedance) for E1 input (RX).

3.2.3 E1 Balanced Port

Balanced port (120Ω) for E1 output (TX: Pin 4, 5).Balanced port (120 Ω /high impedance) for E1 input (RX: Pin 1, 2).



3.2.4 USB Port

The tester can work as an USB disk, after connecting to PC; the stored record can be downloaded. We can upgrade tester's software via the USB port.

3.3 Bottom Datacom Port

The datacom port is a DB25 multi-protocol interface，can support V.35，V.36，V.24，X.21，RS530 etc standard datacom interface via various Cable wire.

3.4 Other Accessories

3.4.1 Touch Pen

Touch pen is used to click and input on the screen. It is usually placed in the back of the tester. Please keep it into the original position after use to prevent loss.

3.4.2 L9 Self-test Cable

Use for testing the E1 unbalanced ports (RX & TX) ， to check the E1 test function.

3.4.3 Loopback Test Plug

Use for testing the datacom port, to check the datacom test function.

Chapter 4 Operation

4.1 Main Operation Interface

Press the power button and the tester begins to work, DADI logo displays on the screen, then operation interface displays as follows:

This bar includes battery volume and present time indication. Click “present time” and a dialogue box will pop up; you can modify time and date through this dialogue box. When battery icon turns red, please charge immediately.

- functions icon bar

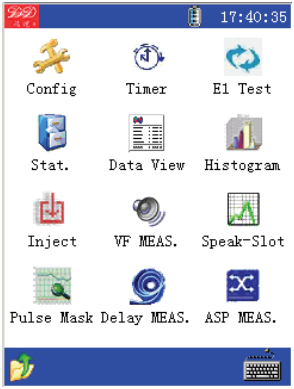
This bar includes some functions icons, each represents a function, click the icon and enter the function interface.

- Tool Bar

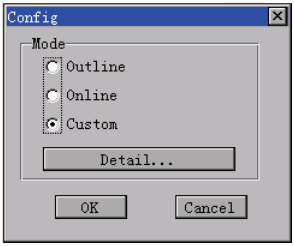
This bar includes  return icon （return to upper operation interface）and  SIP icon（open/close soft input panel）.

4.2 E1 Test

You can make an E1 test by L9 or RJ48 port on the top panel, as follows:



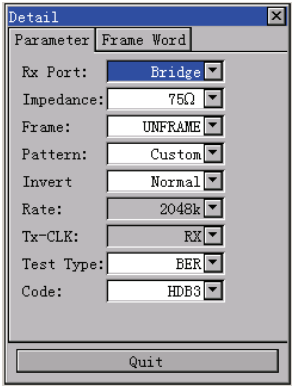
4.2.1 E1 Test Configuration



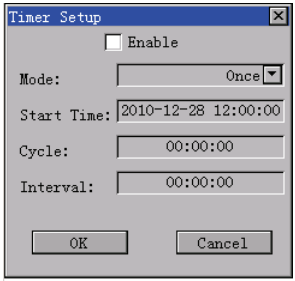
As above, we have preset two usual modes: outline test and online test. Outline mode is default as BER test with unframe structure, termination and 2E15-1 pattern; online mode is default as high-impedance monitor, LIVE (frame BER) test, only frame structure is optional. Click “Detail” for detailed configuration.

If the above setting can not meet test needs, you can choose customized mode, and click “Detail” button .The pop -up detail dialogue box lists all optional items, as follows:

Note: All modifications in detail dialogue box will be available, until you click “OK” in “Config” dialogue box.

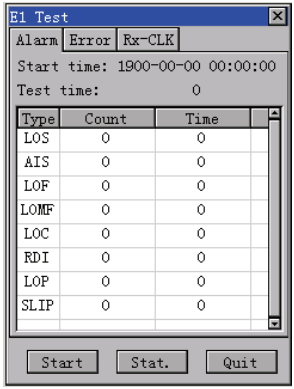


4.2.2 Timing Test



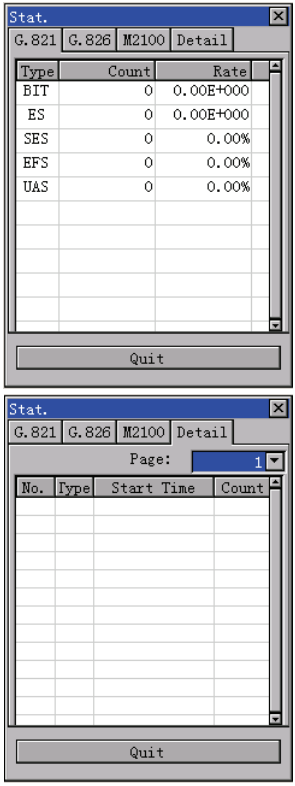
As above, you can set single or continuous timing test. Auto test results will be automatically saved as a file that labeled with test finishing time. You can view auto test results at Records Management .

4.2.3 Test and Statistics



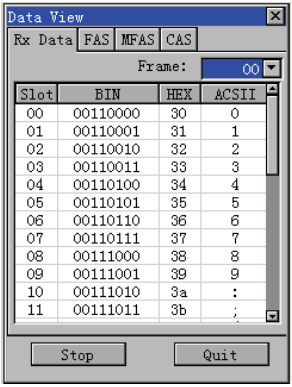
As above, click “start” to start test; a small test icon will display on the status bar for test status. Click “Error” or “RX-CLK” label to see more real-time test results.

Click “Stat.” button or click “Stat.” icon in E1 test main interface and you can view the error analysis according to G.821, G.826, M2100; and details of errors or alarms.



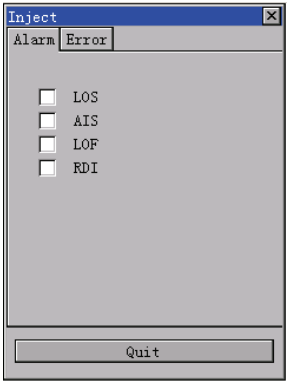
An event detail's resolution is 1 second, the count is errors quantity within 1 second or alarm sustained time.

4.2.4 View Data



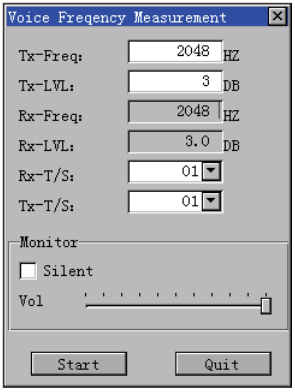
The tester real-time displays received time slot data, FAS words, MFAS words, and signaling.

4.2.5 Defect Inject

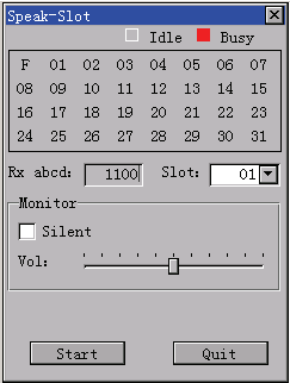


You can select to inject alarms or errors, and a small “inject” icon will display on the status bar for defect insert status.

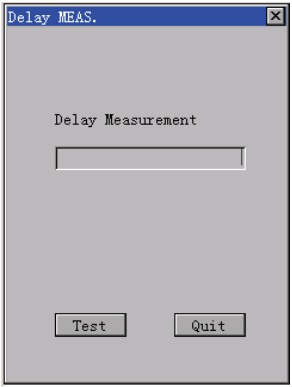
4.2.6 VF Measurement and SPEAK-Slot



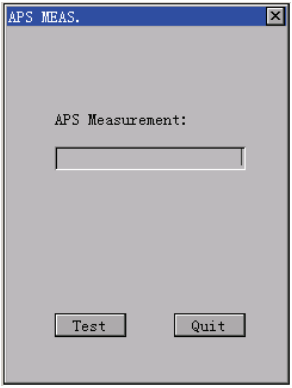
Voice Frequency range is 50～3950Hz, level range is 3～-59dBm.



4.2.7 Delay and APS Measurement



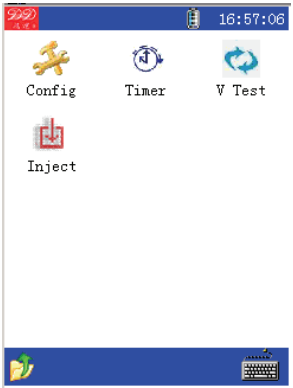
As the delay of a looped back signal, before clicking “test” key, the signal must be loopback at remote. Delay test max time is 3 seconds.



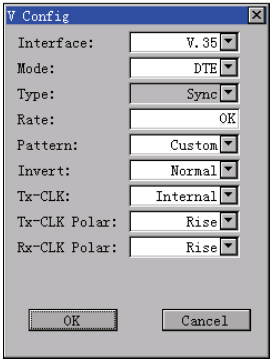
Click “Test” key in 10 seconds before switch, and be sure that tester receives without any alarm and error. After switch, tester will calculate APS time according to the signal defects.

4.3 Datacom (V Series Port) Test

You can make a datacom (v series port) test by DB25 multi-protocol port at the bottom of tester, as follows:

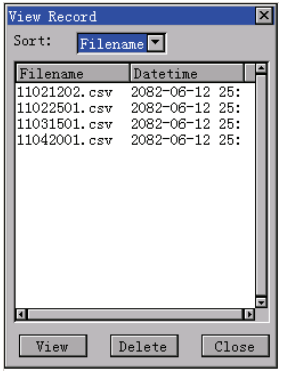


Except the test configuration, other functions are same as the E1 test, the datacom signal configuration as follows:



4.4 Records Management

The test records are stored into internal flash chip with *.CSV file format, listed in the “View Record” window. The display of records is the same as real-time test.

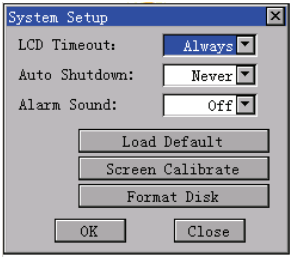


4.5 Save Records to PC

The test records also can be copied to PC via USB port. When the test is connected to PC by Mini_USB cable, it will work as an USB disk with records in CSV file format same as “Records Management”.

4.6 System Settings

Timing set of backlight and automatic shutdown, factory-set and screen calibration function are provided. As follows:



Note: “Format Disk” will clear up all stored test records.

4.7 Software Upgrade

The tester can upgrade software through USB port. In order to avoid errors, please contact us before you upgrade (contact on the back cover), confirm the requirement and complete the upgrade under our technique support.

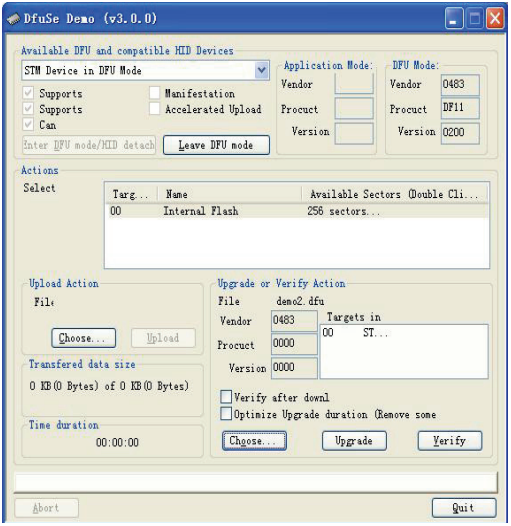
The detailed upgrading steps are as follows:

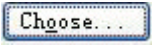
1）Connect the tester USB port with PC

2）Press the “power” and “soft keyboard” buttons at the same time

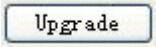
when the tester is off, then the tester screen becomes white, waiting for software upgrading.

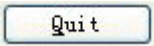
3）Open the software on PC, and it will find a instrument automatically (on the Actions column there will be a similar display “00 Internal Flash 256 sectors..”) as follows:



4）Click 

button, select the upgrade document.

5）Click 

button to start upgrade, at this moment the bottom scroll bar will display the progress. After complete the upgrade, click 

to exit.

Chapter 5 Malfunction Analysis and Solution

Faults	Causes	Solutions
Tester can not open	Low battery	Turn on after full charge
Alarms or errors existing always	Be injecting defects	Cancel error or alarm insertion
LOF occurs on PCM30 testing	PCM31 system is	Set the tester to PCM31
LOS existing always	1 .No Input signal 2. 120 Ω port is selected	1.Check the input cable 2. Select 75 Ω port
Errors appear all the time in the online monitoring.	Test type selected as BER Mode	Select the test type as Live Mode
Unknown faults	The confusion of settings	Load default setting

Chapter 6 Main Technical Parameters

6.1 E1 BER test parameter

- internal clock：2048KHz±5ppm
- test code：HDB3/AMI
- framing：PCM30 / PCM30 CRC/ PCM31 / PCM31 CRC，unframe
- test pattern：PRBS 2n－1（n=6,9,11,15,20,23）, all 0，all 1，1010，16 bits user test patterns
- error injection type：bit、Code、CRC4、FAS
- error injection mode：single、multiple、Rate 1×10-n（n=3，4，5，6，7）
- TX clock：RX clock、internal oscillator
- alarm detection：LOS、AIS、LOF、RDI、LOC
- TX clock offset：-125～+125ppm
- audio frequency measurements：
- frequency range：50Hz～3950Hz，resolution 1Hz
- level range：+3dBm～-59dBm，resolution 1dBm
- TX port：unbalanced L9（75Ω），balanced 120Ω
- RX port：unbalanced L9（75Ω），balanced 120Ω，monitor（>2KΩ）

6.2 Datacom test parameter

- bit rate：50bit/s～2048kbit/s
- code：binary code stream
- test pattern：PRBS 2n－1（n=6,9,11,15,20,23）, all 0，all 1，1010，16 bits user test patterns

- error injection：single, Rate 1×10-n（n=3，4，5，6，7）
- interface standard：V.24/RS232、V.35、V.36/RS449、X.21、RS530

6.3 Others

- 320×240 TFT color LCD, touch screen
- embedded operation system, Icon interface
- 5000 records can be saved, work as an U disk to PC,
- Storage space: 2MByte
- built-in 7.4V 1500 mAh Li battery，max system power 2.5W
- battery operation time：about 8 hours
- battery charging time: about 6 hours
- temperature range：
  nominal range of use：-10℃～+50℃
  storage range：-40℃～+70℃
- size：146mm×87mm×50mm
- weight：0.6Kg

Information about service

Company Website: http://www.lzdd.com

Business Line: (086)-10-82511182

Technical Support Line: (086)-10-82867177