Exception Clause

This information and all other documents in printed or electronic form are only provided for reference. Although efforts have already been made to confirm the integrality and accuracy of this information, the Liuzhou Dadi Telecommunication Equipment Co., Ltd. Just offers this information and all other documents “As Is (the original)” without any guarantee, and refuses to provide any guarantees within the range permitted as wide as possible, including but not limited to those guarantees concerning the implicated marketability, non-infringement and the suitability to specific applications. In addition, the Liuzhou Dadi Telecommunication Equipment Co., Ltd. Will not take the responsibility for any damages due to the use of such information or other documents (including but not limited to any direct, indirect, inevitable or accidental ones). Though some contents may supplement each other, no contents included in such information or any other documents will make any guarantees or statements of the Liuzhou Dadi Telecommunication Equipment Co., Ltd (or its suppliers or licensers), and any changes to those clauses applicable to the license agreement of this software as well.

Copyright

This product is under the protection of the copyright law. Without the authorization in writing by the Liuzhou Dadi Telecommunication Equipment Co., Ltd. In advance, no one is allowed to copy, print, adapt, translate or abbreviate all or part of this product and documents into any electronic or machine-readable forms, unless
otherwise expressly provided in this software license agreement.

© All rights reserved 2005 – 2012. Liuzhou Dadi Telecommunication Equipment Co., Ltd

DADI Science & Technology District, Liuzhou
New & High-tech industrial Development Zone, Liuzhou, Guangxi, China

All rights reserved. Printed in China.

Trademark

Dadi is the registered trademark of the Liuzhou Dadi Telecommunication Equipment Co., Ltd. In China and other countries. Pentium and Intel are the registered trademarks of the Intel Corporation in U.S.A. and other countries. Windows 2000 is the trademark of the Microsoft Corporation in U.S.A. or other countries. Logos such as ActiveX, Microsoft, NetMeeting, PowerPoint, Windows, Windows NT and Windows are the registered trademarks of the Microsoft Corporation in U.S.A. or other countries. The names of other products and companies mentioned may be the trademarks or registered trademarks of their owners.

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 .......................................................................................... 1

Chapter 2  Inspection ...................................................................................... 3
  2.1  Unpack the Instrument ................................................................. 3
  2.2  Accessory and Option ................................................................. 3
  2.3  Power Supply ................................................................................. 3

Chapter 3  Tester Configuration.......................................................... 5
  3.1  Front View ....................................................................................... 5
    3.1.1  LEDs ....................................................................................... 6
    3.1.2  Buttons ..................................................................................... 6
  3.2  Top Panel......................................................................................... 7
    3.2.1  Power Adapter Plug ............................................................. 7
    3.2.2  E1 Unbalanced Port ........................................................... 7
    3.2.3  E1 Balanced Port .................................................................. 7
    3.2.4  USB Port .................................................................................. 7
  3.3  Bottom Datacom Port ................................................................. 8
  3.4  Other Accessories ......................................................................... 8
    3.4.1  Touch Pen ............................................................................... 8
    3.4.2  L9 Self-test Cable ................................................................. 8
    3.4.3  Loopback Test Plug .............................................................. 8

Chapter 4  Operation ................................................................................. 9
  4.1  Main Operation Interface ........................................................... 9
  4.2  E1 Test ......................................................................................... 10
    4.2.1  E1 Test Configuration .......................................................... 11
4.2.2 Timing Test ................................................................. 12
4.2.3 Test and Statistics .................................................. 13
4.2.4 View Data ............................................................... 15
4.2.5 Defect Inject ............................................................ 16
4.2.6 VF Measurement and SPEAK-Slot ....................... 17
4.2.7 Delay and APS Measurement ............................... 18

4.3 Datacom (V Series Port) Test ....................................... 19
4.4 Records Management .................................................. 20
4.5 Save Records to PC ...................................................... 21
4.6 System Settings ........................................................ 21
4.7 Software Upgrade ....................................................... 21

Chapter 5 Malfunction Analysis and Solution ...................... 23

Chapter 6 Main Technical Parameters ................................ 25
6.1 E1 BER test parameter ............................................... 25
6.2 Datacom test parameter .............................................. 25
6.3 Others ....................................................................... 26

Information about service ................................................. 26
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:

<table>
<thead>
<tr>
<th>Name</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS</td>
<td>Loss of signal</td>
</tr>
<tr>
<td>AIS</td>
<td>AIS signal have been found</td>
</tr>
<tr>
<td>LOF/LOP</td>
<td>Loss of frame or Loss of pattern</td>
</tr>
<tr>
<td>RDI</td>
<td>RDI have been found</td>
</tr>
<tr>
<td>ERR</td>
<td>Error have been found</td>
</tr>
<tr>
<td>Power</td>
<td>Tester at power on status</td>
</tr>
</tbody>
</table>

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:

![](system_setup.png)

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

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


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 $2^n-1$ (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 $1\times10^{-n}$（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 $2^n-1$（n=6,9,11,15,20,23），all 0，all 1，1010，16 bits user test patterns
• error injection: single, Rate $1 \times 10^{-n}$ ($n=3, 4, 5, 6, 7$)
• 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: $-10^\circ C \sim +50^\circ C$
  storage range: $-40^\circ C \sim +70^\circ C$
• size: 146mm×87mm×50mm
• weight: 0.6Kg

Information about service

Company Website: [http://www.lzdd.com](http://www.lzdd.com)

Business Line: (086)-10-82511182

Technical Support Line: (086)-10-82867177