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Find the *Tektronix YBT100* at our website: ***Click HERE***

NetTek YBT100 / YBT100DS3

Easy to Use, Portable, Ready for the Field



T1 and T3 Circuit Tester for NetTek and PC

Tremendous growth in the telecommunications market has increased competition within the industry. Next-generation data and voice services are demanding near-perfect high-speed transport circuits while at the same time many service providers have lowered their service prices. This market dynamic has resulted in providers focusing their efforts on quick deployment of new circuits, complete circuit maintenance, and low mean-time-to-repair. The dual-T1 YBT100 and the dual-T1 and single T3 YBT100DS3 Backhaul modules for the NetTek enable mobile operators to quickly and efficiently test backhaul and transport circuits, resulting in higher productivity with less outage time. They offer the technicians the flexibility to test T1 and T3 circuits while being controlled with the NetTek or the technician's laptop.

The YBT100/YBT100DS3 modules for the NetTek are capable of completely analyzing test measurements needed to uncover T1 problems affecting a live mobile network and ultimately reducing down time. For T1 and T3, all errors, alarms, and signal quality information is displayed on one easy to read summary page which may be stored for benchmark testing during turn-up or for retrieval and further analysis at a later time.

Key Features

- ▶ Modular Design for the Handheld NetTek BTS Toolkit
- ▶ Easy to use Graphical User Interface
- ▶ T1 and T3 modules operate stand-alone, connected to NetTek, or connected to a laptop
- ▶ Ability to test, verify and store results of T1 and T3 circuits

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Features and Benefits

Wireless or Serial Connection

The YBT100 and YBT100DS3 use a Wi-Fi or serial connection to a user's laptop computer or a wired connection to the NetTek. A Wi-Fi connection benefits a technician by allowing them to test during adverse weather conditions without even leaving their vehicle.

Summary Reports

Whether a technician is conducting a T1 or T3 test, an easy-to-read configuration and summary page will be displayed on either a laptop or the NetTek's screen. This summary page shows complete results of line coding, framing format, errors, alarms and received signal quality and characteristics. Test results may also be stored on the technician's laptop for further analysis at a later time, or for verification of circuit parameters which may be delivered to a customer at turn-up or after a repair. These results also serve as a benchmark that can be stored at turn-up and then referred to during a potential repair or comparison. The YBT100 and YBT100DS3 are streamlined to allow for quick and effective circuit diagnosis by technicians in the field.

Timed Acceptance Testing

The YBT100 also has the ability to perform timed acceptance testing for T1 signals. Timed acceptance testing is increasingly becoming a benchmark test before turning over a circuit for customer services. It is becoming increasingly evident within the industry that short five-minute Bit Error Rate tests (BERT) are not acceptable in determining whether a circuit can efficiently carry modern data intensive services. Timed tests are the answer to this problem and allows the technician the ability to control all parameters during long tests, thus reducing the chances of improperly set test settings which costs time and money.



YBT100 / YBT100DS3

Applications

- In-Service Monitoring
- Signal Analysis
- End-to-End BERT Testing
- Loop Testing
- Equipment Emulation

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DS1

The standard dual-T1 ports on the YBT100 allow for testing of two T1 circuits simultaneously or for monitoring two sides of the same T1. This can reduce total testing time. The YBT100 has fully integrated dual transmitters and receivers effectively combining two complete T1 test sets into one compact package. It allows technicians to perform end-to-end Bit Error Rate (BER) tests with a wide range of test patterns and store complete test results. Dual receivers greatly benefit testers and installers by easily isolating the direction and location of errors and alarms at any test access point. This feature is especially valuable when the circuit is experiencing intermittent problems and needs to be observed for a long period of time. The dual monitor also can be used to sectionalize a circuit problem before disrupting service in order to fix the issue, thus reducing costly down-time. The YBT100 also incorporates CSU and NIU loopback testing and emulation which can help quickly sectionalize and isolate a circuit. One technician with a single test set may completely test a circuit instead of deploying two technicians and separate equipment. Since many backhaul systems are migrating from traditional T1s to HDSLx T1s, the YBT100 also incorporates HDSLx looping and testing capabilities. This makes for a "complete" T1/DS1 testing solution in one portable unit that is extremely easy to use.

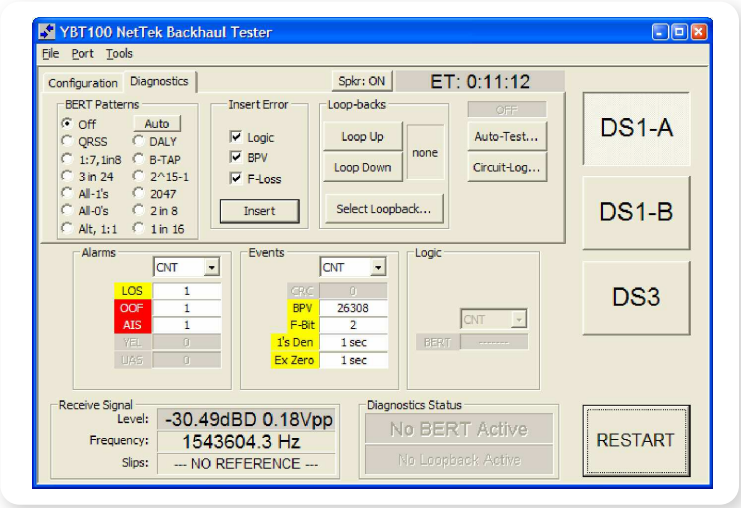


Figure 2 - *T1 test up and running*

DS3

The YBT100DS3 allows a technician to monitor a channelized or un-channelized DS3 signal for errors, alarms and analyze signal quality. This feature can reduce down-time since the circuit is not disrupted while the technician gathers information on network performance. Besides monitoring, the YBT100DS3 will transmit and receive an un-channelized DS3 for full-pipe BER testing with complete error and alarm results displayed on an informative summary results page. The single port T3 also allows insertion of a channelized DS3 which emulates muxed DS3 signals. This means that that an individual DS1 signal within a DS3 can also be tested. With all of this capability, a technician can quickly test and verify multiplexing and de-multiplexing functionality of DS3 facilities and equipment.

The YBT100DS3 also supports DS3 through–mode. This allows a live DS3 to pass through the YBT100 for error, alarm and signal analysis without regenerating the signal. It also supports the ability to emulate and loop a CSU and Line on a DS3. This feature enables the technician to isolate problems on a circuit by observing direction and location of received errors. In addition to DS3 Loopbacks the YBT100DS3 supports FEAC loopcodes on a DS3 and DS1 level, further allowing loopback testing of DS1 signals within a DS3.

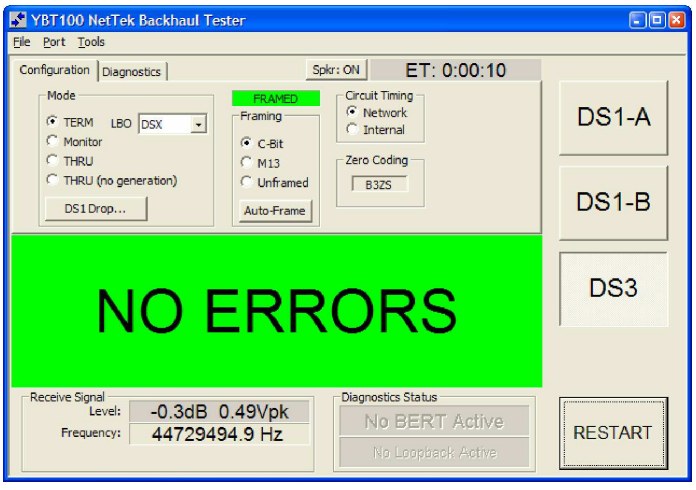


Figure 3 - *T3 set up screen*

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Specifications - YBT100 Measurement Characteristics for T1 Testing

Line Coding
- AMI.
- B8ZS

Framing Modes
- Auto Detect (The test equipment will sample the signal for any framing format. If a framing format is found it will be displayed and the YBT100 will begin transmitting that framing format.)
- D4 (Superframe)
- ESF (Extended Superframe)
- SLC96
- UnFramed

Test Interface
- Bantam Jacks (2 Tx and 2 Rx)

Test Modes
- Terminate (100 ohms)
- Bridge (>1k ohms)
- Monitor (connected via DSX)
- Loopback
- Emulation for DS1 CSU and DS1 NIU
- Dual and independent DS1 A and B

Receiver Sensitivity
- Monitor -15 to -32 dB
- Terminate & Bridged +6 to -36 dBdsx
- Resolution & Accuracy -1.0 to -39dB ±1.25dB

Frequency Resolution & Accuracy
- Hz ± 3 ppm with external reference clock to Bantam Rx input
- Slip ± Count and Deviation in 1 Hz steps

Clock Source
- Internal accuracy 1.544 MHz +/- 10 ppm
- Network Loop Timed +/- 300 ppm

Line Build Out (LBO) levels
- DSX, Hi and Low (Hi/ Low is DS3)
- 0 dB, -7.5 dB, -15 dB and -22.5 dB
- Emulation for DS1 CSU and DS1 NIU
- Standards Compliance AT&T Pub. 62411 and ANSI: T1.403

Loopback Codes
- HDSL – PairGain format
- NLOC including NDU1 and NDU2
- HDSL – ADTRAN format
- DS1 In-Band Loopbacks
- DS1 ESF FDL (Out of Band) Loopbacks
- Local (internal) Loopbacks

Circuit Status Reports (LEDs)
- T1 Pulses
- History
- Line Coding
- Frame Synchronization
- Pattern Synchronization

Alarm Detection
- Red (LOS)
- Yellow
- AIS (Keep Alive)

Error Detection
- BPV
- CRC
- Frame Error
- Bit Error
- Ones Density Violation
- Excessive Zeros
- Signal Level – dBdsx or Vp-p.
- Frequency
- Timing slip measurements

Error Insertion
- BPV
- Bit Error
- Frame Errors
- CRC

Pattern Generation and Detection
- Auto, QRSS, 1:7, 3in24, All-1's, All-0's, Alt 1:1, Daly, Bridge-Tap, 2^15-1, 2047, 2in8, 1in16, Alt 1:1, 2^15-1, 2047, 1 in 16, Bridge Tap

Loopback Codes
- CSU, In-Band or Out-of-Band.
- NIU, In-Band or Out-of-Band.
- User-defined.

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YBT100DS3

Line Coding
- B3ZS

Framing Modes
- Auto Detect (The test equipment will sample the signal for any framing format. If a framing format is found it will be displayed and the YBT100 will begin transmitting that framing format.)
- C-Bit (channelized or un-channelized)
- M13 (channelized or un-channelized)
- UnFramed

Test Interface
- BNC Jacks
- Termination Impedance 75 ohm nominal

Test Modes
- Monitor-DSX
- Term-DSX
- Through-mode
- Loopback

Receiver Sensitivity
- Up to 26 dB resistive
- Accuracy & Resolution -1.0 to -26 dB ± 1.25 dB

Frequency Measurement Accuracy
- ± 3.0 ppm

Clock Source
- Internal Accuracy 44.736 MHz ± 20 ppm
- ± 100 ppm Network/Loop-timed

Transmitter
- Line Build Out levels Hi, DSX, Low
- Standards Compliance G.703, G.775, TR-TSY-000009, TR-TSY-000499 and ANSI: T1.403, T1.102, T1.107

Loopback Codes
- FEAC loopbacks (DS1 and DS3 level)
- DS3 NIU Loopback
- DS3 CSU Loopback

Circuit Status Reports
- T3 Pulses
- History LEDs
- Line Coding
- Frame Synchronization
- Pattern Synchronization

Alarm Detection
- Red (LOS)
- Yellow
- Blue (1010) keep alive
- FEOOF
- FEAC Alarms

Error Detection
- BPV
- Bit Error
- Frame Error
- FEBE
- Parity
- C-Parity
- Level Measurements – dBdsx or Vp-p
- Frequency

Error Insertion
- BPV
- Bit Error
- Frame Error

Pattern Generation and Detection
- 2^23-1, 2^20-1, 2^15-1,QRSS,1010,1111,1100, Tx Idle, Tx AIS, 1000, 3in24

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General Characteristics

General Characteristics

- Graphical User Interface using touch screen and large fonts
- Common User Interface
- One or two key press auto testing
- One screen loopbacks
- Circuit-ID storage
- Log date & Time Stamp
- Visual and audio loopback verification with pre-existing loopback qualification
- NetTek Y400 via serial cable
- PC via WLAN (802.11 b) or serial cable

T1/T3 Module –

- Software configurable T1 or RS-232 (ANSI T1.403, ITU-T G.703 compatible)
- WLAN 802.11b

Temperature

- Operating: 0 ºC to +50 ºC.
- Nonoperating: –40 ºC to +60 ºC

Humidity

- Operating: 5% to 80% up to 30 ºC; 5% to 35% from 30 ºC to 50 ºC.

Physical

- 1.6 x 3.7 x 9.0 inches
- 1.2 lbs

Warranty: One year parts and labor.

Battery Life: Greater than 8 hours continuous

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Accessories

- T1 foot BANTAM CABLES Gray
- DS3 75OHM BNC CABLES (transmit)
- DS3 75OHM BNC CABLES (receive)
- 115 VAC POWER ADAPTOR
- Instrument RS232 interface cable.
- Instrument pouch
- Accessory pouch
- 802.11 Antenna
- BNC to WECo 440 adapter

For Further Information

Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology.

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www.tektronix.com/
communcations

Phone:
1-800-833-9200 option 1
+1-469-330-4000

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