FLUKE networks

635 QuickBERT™-T1

635 Features

- Transmits all standard T1 BERT patterns and loop codes
- Transmits HDSL loop codes
- Has the ability to insert logic, BPV, and frame bit errors
- Automatically syncs to and displays framing type, line coding, and BERT pattern
- Performs BERT and Fractional T1 BERT (Nx56 and Nx64)
- Captures and displays DTMF digits
- Measures DS1 frequency, level, and clock slips
- Displays standard T1 alarms and major T1 performance parameters
- Displays AMI or B8ZS line coding
- Monitors voice, DS0 frequency and level, and DS0 signaling and data bits
- Prints test results and setup information

Fast, automatic testing

The Fluke Networks QuickBERT-T1 test set makes quick and easy work of T1 facility verification and troubleshooting. Plug in this tester and instantly get essential information including framing type, line coding, BERT pattern, T1 signaling and frame synchronization status, alarm conditions, density violations, and framing loss. Error conditions are also automatically displayed such as: bipolar violations, frame bit errors, CRC errors (ESF), and bit errors in a received BERT pattern. For long-term testing, history status is provided to indicate intermittent problem conditions. And for further analysis, test results can be printed.

The QuickBERT-T1 gives you fast, in-depth test features without time lost in configuring the test or remembering setups and menus. The lightweight, rugged design makes this handheld instrument easy to use in any location.

Complete T1 BERT Set

The QuickBERT-T1 verifies bit error performance, frequency, and level of the DS1; signaling and VF performance of the individual DS0s; and general T1 performance parameters. A full-range primary T1 receiver is provided for testing low-level signals. A secondary reference receiver is also available for analysis of network synchronization and timing. Ten common BERT patterns are provided with the unit, as well as a user-selectable 64-bit pattern that may be customized. The QuickBERT-T1 can also be used in a Thru mode which allows you to transmit the Rx signal back out the Tx jack.

The QuickBERT-T1 is equipped with a T1 transmitter. If significant problems have developed, an out-of-service BERT may be necessary. BERT or Fractional T1 BERT may be performed by simply connecting the unit to the facility, transmitting the appropriate loop code, and selecting a pattern. The QuickBERT-T1 does the rest.

Decodes and displays signaling and data bits

For individual channels, the QuickBERT-T1 decodes and displays signaling and data bits associated with each of the 24 DS0s. The audio quality of the channel is quickly determined via the internal speaker or external headset. If more precise analog measurements are necessary, the frequency and level of a tone present on a channel can be displayed on the LCD screen.

Independently transmits and receives

The transmitter of the QuickBERT-T1 is independent from the signal on the receiver, allowing you to transmit one BERT pattern while receiving another.

Tests at any point in the span

For in-service testing, the QuickBERT-T1 is equipped with a full-range primary receiver, which allows use at any access point on the T1 facility (e.g., monitor jack or bridge access point). The test set determines the level and frequency of the T1 signal. For out-of-service testing, it may also be used to terminate a T1 span.

Solves timing problems

Timing is one of the most common sources of error within a T1 network. The QuickBERT-T1 contains a secondary reference receiver for use in measuring clock slips. When a signal is present on both the primary and secondary receivers, the test set registers and displays the timing differential between the two clocks. If clock synchronization is causing the problem, it can be readily determined and isolated without additional test equipment. The reference receiver in the QuickBERT-T1 may also be used for an external precision transmit clock source.

Specifications

Primary T1 Receiver

Input impedance

Bridge: >700 ohms
Term: 100 ohms ± 5%
Monitor: 100 ohms ± 5%

Range

Bridge: 6 to -30 dBDSX
Term: 6 to -30 dBDSX
Monitor: -15 dB to -24 dB

Framing

NONE, D4, ESF, SLC®96

Line coding

AMI, B8ZS

Patterns

QRSS, 1 IN 7, 2 IN 8, 3 IN 24, ALL 0'S, ALL 1'S, 1:1, NET55, OCT55, DALY55, USER (default = 1:16)

Status/history

AMI (status only), B8ZS, Signal Present, Out of Frame, Blue Alarm (AIS), Ones Density, Excess Zeros, Yellow Alarm, DS1 Idle Signal (all Tx patterns are frame aligned), Pattern Sync Loss

DS0 drop

Selected DS0 channel to eight data bit LEDs and speaker

DS0 signaling types

Robbed Bit, CCIS, E-Bit

DS0 Signaling Bits

A, B, C, D

Reference T1 Receiver

Input impedance: 100 ohms ± 5%
Range: 0 to -36 dB
Compatibility: AT&T® TA24/CB113

Transmitter output

Line codes: AMI or B8ZS
Framing: NONE, D4, ESF, SLC®96
Frequency: 1544000 Hz ± 5 ppm
Patterns: QRSS, 1 IN 7, 2 IN 8, 3 IN 24, ALL 0'S, ALL 1'S, 1:1, NET55, OCT55, DALY55, USER, THRU
LBO: Fixed at 0 dB
Tx clock source: Internal, derived from received data, or external
Loop codes: CSU, NIU4, NIU5, NTWRK (ESF), LINE (D4), LINE (ESF), PYLD (ESF), ARM (D4), ARM (ESF), HTU-R, HTU-C, HRE1, HRE2, NREM, NLOC, NDU1, NDU2, CREM, CLOC, CDU1, CDU2
Pulse Shape: Complies with AT&T® Pub 62411 and ANSI T1.403
Jitter Tolerance: Complies with AT&T® Pub 62411

Connectors

Rx T1 Receiver Term/Mon/Bridge: Bantam jack
Tx T1 transmitter: Bantam jack
Ref T1 Receiver: Bantam jack
Headset: 3.5 mm phone plug- stereo (for customer-provided headphones)
Printer/PC: RS232 DB9 (male) 2.4 to 19.2 kbps. Cable included.

Results

Display: 4 x 20 liquid crystal display (LCD)
Clock slips: Positive number means reference clock faster; negative number means reference clock slower
Errors: BIT, BPV, FRM, CRC, ERRORED SECONDS; maximum count 2.8147E14
Signal: DS1 FREQ, DS1 LEVEL, DS0 FREQ, DS0 LEVEL
DS1 Freq accuracy: ± 5ppm
DS1 Freq resolution: 1 Hz
DS1 Freq range: 1544000 ± 10,000 Hz
DS0 Freq accuracy: ± 1.5 Hz

Power

Battery pack: Rechargeable, nickel metal hydride (NiMH)
Battery life: Approximately six hours of continuous operation
Low battery: Red LED illuminates indicating recharge is needed
Auxiliary power: 9-12 VDC, 1000 mA

Environmental

Operating temperature: 32˚ to 122˚F (0°C to 50°C)
Storage temperature: -4˚ to 140˚F (-20° to 60°C)
Humidity: 95% maximum, non-condensing

Physical

Size: 1.75"H x 5"W x 9"L (4.4 cm x 12.7 cm x 22.8 cm)
Weight: 1 lb, 10 oz (.7 kg)

Ordering Information

Model	Description
635	QuickBERT-T1 (Includes: carrying case, ToolPak™ Accessory Kit, AC power adapter, two Bantam-to-Bantam cables, RS232 cable and trimmer tool to adjust LCD contrast)
633/635 Kit	Cable Kit (Includes: two Bantam-to-310 cables, two Bantam-to-Alligator clip cables and one Bantam-to-RJ48 cable)

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