



SPECIFICATIONS

7.1 INTRODUCTION

This section contains specifications for the T-BERD 107 T-Carrier Analyzer.

7.2 PHYSICAL CHARACTERISTICS

- Size: 8.5"H x 4.25"W x 3.25"D (8.26 cm x 10.78 cm x 21.59 cm).
- Weight: 3.4 lbs. (1.5 kg).

7.3 OPERATIONAL REQUIREMENTS

- Operating Temperature Range: 0°C to +45°C (32°F to 113°F).
- Storage Temperature Range: -40°C to +70°C (-40°F to 158°F).
- AC Adaptor: 120 VAC to 9 VDC.
- Batteries: Sealed Lead Acid.
- Battery Life: 5.0 hours nominal (3.0 hours with T1 Channel Monitor or T1/T1C Transmitter Option).
- Battery Recharge Time: 12 hours.

7.4 INPUT SPECIFICATIONS

- Input Connection: WECO jack or bantam jack.
- Input Frequency: T1 - 1,544,00 Hz \pm 4,000 Hz.
T1C - 3,152,000 Hz \pm 8,000 Hz.

Specifications

- Input Impedance: BRIDGE (ALBO): 1000 ohms or greater
TERM (ALBO): 100 ohms
DSX-MON: 100 ohms with automatic gain control (AGC).
- Operating Range: BRIDGE/TERM: +7 to -35 dBdsx at T1, +7 to -5 dBdsx at T1C. Automatic line build-out compensates for cable loss characteristics.
- Operating Range: DSX-MON: -16 to -28 dBdsx at T1 and T1C.

7.5 FREQUENCY MEASUREMENT

- Accuracy: ± 5 ppm.
- Resolution: ± 1 Hz.
- T1 Range: 1.544 Mb/s ± 4 kb/s.
- T1C Range: 3.152 Mb/s ± 8 kb/s.

7.6 LEVEL MEASUREMENT

The level measurement capability of the T-BERD 107 is described below. The designation dBdsx is a voltage measurement; a 3.0 volt base-to-peak signal is defined as 0 dBdsx. Measurements for dBm are available only when ALL ONES is detected.

- dBdsx Level Range: +7.0 to -40.0 dBdsx.
- dBdsx Level Accuracy: ± 1 dB between +7 dBdsx and -10 dBdsx
 ± 2 dB between -10 dBdsx and -20 dBdsx
 ± 3 dB between -20 dBdsx and -40 dBdsx.

Specifications

- dBdsx Resolution: 0.1 dBdsx between +7 dBdsx and -6 dBdsx
0.5 dBdsx between -6 dBdsx and -40 dBdsx.
- dBm Level Range: +22.0 to -23.0 dBm.
- dBm Level Accuracy: $\pm 5\%$.
- dBm Resolution: 1 dBm.

7.7 SWITCHES

- **CATEGORY:** LOGIC, BPV & FRAME, SIGNAL & TIME
- **RESULTS:** LOGIC — Bit errors, asynchronous errored seconds, bit error rate, percent error-free seconds, severely errored seconds, and pattern loss seconds.

BPV & FRAME — BPV percent error-free seconds, violations, BPV seconds, BPV rate, frame error second, frame severely errored seconds, frame errors, frame error rate, CRC errors, CRC errored seconds, frame percent error-free seconds, frame loss seconds, CRC severely errored seconds, CRC error rate, and CRC percent error-free seconds.

SIGNAL & TIME — Receive frequency Hz, receive level dBdsx, receive level dBm, receive level Vp-p, signal loss seconds, alarmed seconds, test length, elapsed time, test ends in, clock time, and date.

- **TEST LENGTHS:** Timed or continuous.
- **TIMED TEST LENGTH:** 15 seconds to 200 hours, 59 minutes, 45 seconds. Factory setting is 200 hours.
- **BRIDGE/TERM/DSX-MON:** Sets the input impedance on the T-BERD 107.

- **HALT/RUN/RESTART:** Stops and restarts tests.
- **T1/T1C:** Configures the receiver for either T1 (1.544 Mb/s signal) or T1C (3.152 Mb/s signal).
- **PRINT:** Manually generates a results print.

- **Yellow Alarm:** D4 - bit 2 is a 0 for 255 consecutive channels.
ESF - 256 bits ± 16 bits of a repetitive "1111111100000000" pattern received in the 4 kb/s data link.
SLC - Bit 2 is a 0 for 255 consecutive channels.

7.8 INDICATORS

- **Status:** Signal present, D4 framing synchronization, ESF framing synchronization, SLC-96 framing synchronization, B8ZS detection.
- **Pattern:** QRSS detect, 1:7 detect, 3 in 24 detect.
- **Alarm:** Present and history indicators for Signal Loss, Pattern Loss, Frame Loss, Excess Zeros, Ones Density, Yellow Alarm, All Ones, Error Event.

- **All Ones:** 1024 consecutive ones in unframed T1 or T1C signals; 128 consecutive DS0 channels with all ones for T1 framed modes.
- **Error Event:** Upon the occurrence of a bit error, BPV, frame error, or CRC error.

7.9 ALARM CRITERIA

- **Signal Loss:** 150 ms without input pulses after valid frequency and level are detected.
- **Pattern Loss:** 250 errors detected in 1000 or fewer bits.
- **Frame Sync Loss:** D4 - 2 out of 5 Ft bits in error
ESF - 2 out of 5 Ft bits in error
SLC - 2 out of 5 Ft bits in error.
- **Excess Zeros:** 16 or more consecutive zeros in T1; 34 or more consecutive zeros in T1C.
- **Ones Density:** Less than 12.5% ones density during measurement interval per compatibility bulletin 119, or per AT&T Technical Reference PUB62411. This indicator is disabled when receiving a T1-QRSS pattern or any T1C signal.

7.10 PRINTER AND PRINTER CABLE SPECIFICATIONS

The printer port on the T-BERD 107 is compatible with any serial RS-232 printer. The T-BERD 107 acts as a DCE and the printer is configured as DTE. The port is configured as follows:

- **Baud Rate:** 2400.
- **Data Bits:** 8.
- **Parity:** None.
- **Stop Bits:** 2.
- **Line Terminator:** CR LF.

Consult the factory if this configuration is incompatible with your printer.

Table 7-1 outlines the printer cable connections.

**Table 7-1
Printer Cable Connections**

Signal Name	Pin Number (DB 25)	Pin Number (HIROSE)	Status at T-BERD 107
Protective Ground	1	3	
Transmitted Data	2	3	N/A
Received Data	3	7	OUTPUT
Data Set Ready (DSR)	6	8	N/A
Signal Ground	7	2	GROUND
Data Terminal Ready (DTR)	20	6	INPUT