

# LOGIC ANALYZERS

## General Characteristics

HP 1650B, 1651B, 1652B, 1653B, 1654B, 16500A

### Characteristics

#### Disk Drives/Files

**Built-in disk drives file types:** System software, configuration (contains instrument configuration, data, pointer to inverse assembler file), inverse assembler, auto-configuration.

**Autoload designation:** A predefined configuration file can be loaded at powerup.

**Disk operations:** Store, load, copy, duplicate disk, pack disk, re-name, purge, format disk.

#### Programmability/IO Ports

Instrument settings and operating modes can be remotely programmed for *all* logic analyzer models with either RS-232C or HP-IB (IEEE-488). Both ports are standard on all analyzers. Either port can be used for hard-copy output.

#### Hard-Copy Output

**Printers supported:** HP ThinkJet, HP QuietJet, HP LaserJet series, HP PaintJet, HP DeskJet, Epson and Epson-compatible (such as Epson RX-80, RX-100, MX-80, MX-100) printers via RS-232C or HP-IB

**HP-IB interface functions:** SH1, AH1, T5, TE0, L3, LE0, SR1, RL1, PP1, DC1, DT1, C0, and E2

#### RS-232C Configurations

**Protocols:** XON/XOFF, ENQ/ACK, none, data

**Bits:** 8

**Stop bits:** 1, 1½, 2

**Parity:** None, odd, even

**Baud rates:** 110, 300, 600, 1200, 4800, 9600, 19200

#### Input/Output Rear-Panel BNCs

**Input BNC:** Labeled port-in (HP 16500A) or external trigger input (HP 1650B/1651B/1652B/1653B/1654B). Input signal must drive 6.1 mA ( $I_{in}$ ) @ 0.5 V ( $V_{in}$ )

**Output BNC:** Labeled port-out (HP 16500A) or external trigger output (HP 1650B/1651B/1652B/1653B/1654B). Output signal is active high, TTL output level, high > 2 V into 50  $\Omega$ , < 0.4 V into 50  $\Omega$ .

#### Auxiliary Power Available

Each cable is capable of providing 1/3 A maximum at 5 V. The primary use of the auxiliary power is as a source for preprocessors.

#### HP 16500A InterModule Bus (IMB)

**Run control:** Analog, timing, state, and pattern generation can be armed by group run. Modules can run concurrently or be armed in series. Each module can arm one or more modules.

**Mixed display modes:** Any timing or oscilloscope waveform displays can be mixed. State listings can be included with waveforms in the state/timing Mixed Mode display.

**Acquiring data for mixed displays:** To obtain a mixed display, multiple modules must be armed through the IMB. To include a state listing(s) in Mixed Mode Display, State Time Tagging must be on.

**Time-interval accuracy between modules:** Equals the sum of the channel-to-channel time-interval accuracies of each module used in the measurement, for a deskewed measurement.

#### Operating Environment

**Temperature:** Instrument, 0° to 50° C (+32° to 122° F). Disk media, 10° to 40° C (+50° to 104° F). Probes and cables, 0° to 65° C (+32° to 149° F)

**Humidity:** Instrument, up to 95% relative humidity at +40° C (+104° F). Disk media, 8% to 80% relative humidity.

**Altitude:** to 4,600 m (15,000 ft)

**Vibration-operating:** Random vibration 5 to 500 Hz, 10 minutes per axis, ~ 0.3 g (rms)

**Vibration-nonoperating:** Random vibration 5 to 500 Hz, 10 minutes per axis, ~ 2.41 g (rms); and swept sine resonant search, 5 to 500 Hz, 0.75 g (0 to peak), 5-minute resonant dwell @ 4 resonances per axis

#### Weight

**HP 1650B/1651B/1654B:** Net, 10.0 kg (22 lb); shipping 18.2 kg (40 lb)

**HP 1652B/1653B:** Net, 11.0 kg (24 lb); shipping 19.0 kg (42 lb) shipping

**HP 16500A (max):** Net, 18.1 kg (40 lb) + (.7 kg (1.6 lb) × number of cards); shipping 25.9 kg (57 lb) + (3.6 kg (8 lb) × number of cards)

#### Power

**HP 1650B/1651B/1652B/1653B/1654B:** 115 V/230 V, 48 to 66 Hz, 200 W max

**HP 16500A:** 115 V/230 V, 48 to 66 Hz, 475 W max

#### Size

**HP 1650B/1651B/1652B/1653B/1654B:** 194.3 mm H × 425.4 mm W × 355.6 mm D (7.65 in × 16.62 in × 14.0 in) including rear feet, excluding bottom feet

**HP 16500A:** 222.2 mm H × 425.7 mm W × 548.6 mm D (8.75 in × 16.76 in × 21.6 in), including rear feet, excluding bottom feet