

AUDIO DIGITAL PROCESSING JITTER METER

TIA High Speed & Accuracy Jitter Measurement



PAT.PEND

LE 1870 DIGITAL PROCESSING JITTER METER

GENERAL

The LE 1870 Jitter Meter is designed to quickly and accurately measure the jitter of RF (DATA) signals conforming to the DVD Book (DVD Specifications for Read-Only Disc) with respect to the clock signal using digital processing method (i.e., same method as used by TIA). A large meter and LED panel allow this instrument ideal for production and inspection applications, as well as R&D.

FEATURES

[DVD Measurements]

- **High speed and accuracy measurement by the digital operation system**

By adopting the same digital operation system of TIA to the rms operation, the LE 1870 deliver the high speed and accuracy measurement.

- **The LE 1870 measures 3T through 11T and 14T in the DATA signal with respect to the clock signal and displays jitter in sigma format, and also offers the measurement of narrow pulse 3T jitter.**
- **Jitter in unit of % or sigma value, selectable**
Jitter in unit of % or sigma value, selectable Jitter value can be displayed in unit of percentage with respect to the clock signal. The absolute value can also be displayed in sigma format. The Jitter of the DATA signal can accurately be measured even in the percentage display mode.
- **Jitter measurement in three polarities**
Jitter at the rise, fall, and both edges of the DATA signal can be measured in signal-signal and two-signal measurement modes.
- **Response up to double speed**
Measure the jitter between RF (DATA) signal and regenerated clock signal in inside and display in sigma value.

[For general function]

- **High measurement level sensitivity**
DATA signal can be measured for signal whose amplitude is equal to or more than 50 mVp-p.
- **Input impedance can be selected either 50 Ω or 1 MΩ**
Both 50 Ω input which is internally terminated, and 1 MΩ input which is used with 10:1 oscilloscope probe lessen the disturbance to the system under test.

- **Simultaneous measurement, jitter and RF signal level**
Display the peak level(p-p) of the DATA signal in digital.
- **Analog display for easy adjustment and digital display for parallax free**
The LE 1870 is equipped with both large meter and large digital indicators. The result of jitter measurements can be displayed either on meter or on digital indicator.
- **Measurement inhibit**
The INHIBIT IN connector is provided. This function inhibits jitter measurement when a disc replay malfunction like kickback occurs.
- **Various monitor output**
DATA signal monitor is available and the DC output proportional to the jitter and level indication are provided.
- **Build-in Auto slicer**
Auto slicer which has response features conforming to DVD book is built-in.

[On the Production Line]

- **Convenient GO/NO GO judgement for the production line**
The GO/NO GO result judgement is based on the comparison between the set standard and measured value of level, and is indicated on the LEDs and outputted.
- **REMOTE CONTROL function**
Jitter measurement range and other panel functions can be remotely controlled.
- **RS232C is equipped as standard**
RS232C provides you panel operation and lets you transfer the measured level and jitter level to a personal computer.
- **Easy setting**
Jog dial system offers you easy setting for judgement standard, response time, slice level. All the setting are stored as last memories on each mode/speed of DVD, CD.

SPECIFICATIONS

LE 1870

Input Section

EFM SIGNAL

Input couple: AC
Measurement Voltage Range: 50 mV to 5 Vp-p
Input Impedance: 1 MΩ/ 50 Ω
Bandwidth: 50 MHz, ≤-3 dB
Slice Level: VARIABLE (±2.5 V)
 AUTO (ASYMMETRY ON)
Maximum Input Voltage: ±5 V

INHIBIT IN

Input Impedance: 100 kΩ
Input Signal: 0/ 5 V (Measurement inhibit at 5 V)
Maximum Input Voltage: -0.7 V/ +5.7 V

Jitter Measurement Section

Corresponding Speed: DVD standard speed (27 MHz ±10 %),
 Double speed (54 MHz ±10 %)
 CD standard, 2, 4, 6, 8,10, 12 times speed
 (EFM CLOCK:4.3218 MHz to 51.8616 MHz)

Measurement Mode

DVD All T: DATA to CLOCK
DVD 3 T: PULSE WIDTH
CD 3T: PULSE WIDTH

Scale

DATA to CK Measurement: ns, % (Automatic conversion)
3T PULSE WIDTH: ns

Accuracy

Meter Display: (±4 % of full scale) ± 0.15 ns
Digital Display: (±4 %) ± 0.15 ns

Polarity

DATA: +, -, BOTH
CLOCK: -

Indication:

SIGMA

Measurement Time Constant Variable: 0.04 s to 5 s

Level Measurement Section

Measurement Method: Peak to peak level of RF (DATA) signal
Range

Input Impedance 50 Ω: 50 mV to 5 Vp-p
Input Impedance 1 MΩ: 0.5 V to 9.999 Vp-p
 (conversion value for 10:1 probe)

Display Method: Digital

Accuracy: ±5 %

Clock Frequency Measurement Section

Measurement Range: 27 MHz ±10 %, 54 MHz ±10 %

Measurement Accuracy: ±0.5 %

Clock Reproducing Section

Reproduce the standard clock from the input EFM plus signal

Corresponding Speed: DVD standard speed(27 MHz ±10 %)
 DVD 2 times speed(54 MHz ±10 %)

Judgement Section

Compares the set standard and measurement value of level and jitter to determine GO/NO GO and output the results.

GO/NO GO LED : Meter (Jitter measurement) judgement.

RF LEVEL/JITTER LED: Digital display (Jitter and level measurement) judgement.

Dedicated Remote Terminal: Jitter measurement,
 Level measurement judgement

Output Section

Monitor Output

Output Signal: Input signal or the signal through the equalizer

Output Impedance: 50 Ω

Digitized Output

Output Signal: DATA signal, CLOCK signal

Output Impedance: 50 Ω

DC Output:

Jitter

DATA to CLOCK: DVD: 0.05 V/% or 0.125 V/ns

3T PULSE WIDTH: DVD: 0.1 V/ns

CDx1: 0.025 V/ns

x2: 0.05 V/ns

x4, x6: 0.1 V/ns

x8 to 12: 0.25 V/ns

Level: 0.4 V/Vp-p

Remote Control Section

Designated Remote Terminal: Judgement output and Panel setting
RS232C: Control, Data output

Environmental Conditions

Operating Temperature: 0 to 40 °C

Operating Humidity: ≤ 85 % RH (without condensation)

Spec-Guaranteed Temperature: 10 to 30 °C

Spec-Guaranteed Humidity: ≤ 85 % RH (without condensation)

Storage Temperature: 0 to 50 °C

Operating Environment: Indoor use

Operating Altitude: Up to 2,000 m

Overvoltage Category: II

Pollution Degree: 2

Power Requirements

90 to 250 VAC, 50/ 60 Hz
 55 Wmax.

Dimensions and Weight

213 (W) × 132 (H) × 300 (D) mm, 4.0 kg

Accessories

Power cord..... 1
 Instruction manual..... 1

LE 1870 Rear Panel

