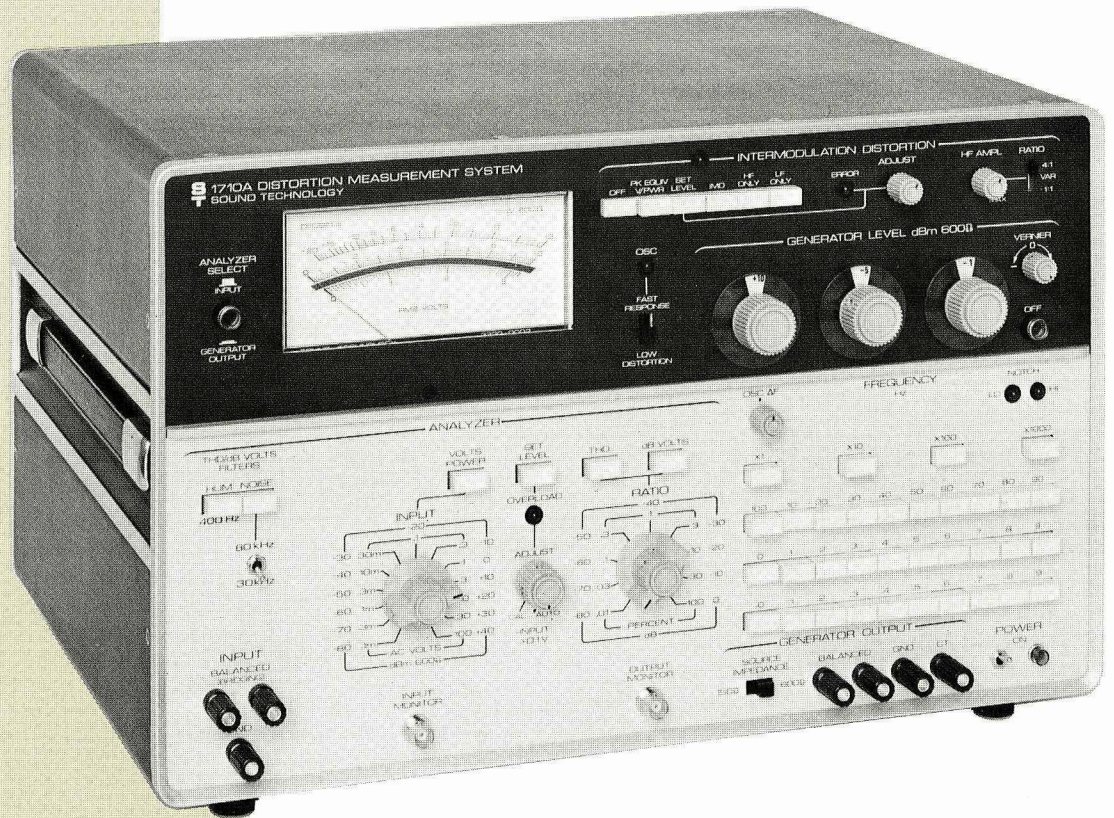


DISTORTION MEASUREMENT SYSTEM



A distortion analyzer and oscillator simultaneously tuned in one fast and easy-to-use system.

- Use the .001% distortion balanced and floating oscillator for testing from 10 Hz to 110 kHz.
- Measure distortion down to .002% in less than 5 seconds.
- Fully automatic nulling eliminates balance controls.
- Measure ac voltage 100 μ V full scale to 100V full scale with 2% accuracy.
- Measure power -80 dBm full scale to +40 dBm full scale.
- Measure voltage or signal-to-noise ratios with 100 dB dynamic range.
- Balanced input measures floating or balanced sources, reduces ground loop and noise pickup.
- Automatic Set Level and Intermodulation Distortion Measurement optionally available.
- Designed for use in strong rf fields.
- 2 year parts and labor warranty.



SOUND TECHNOLOGY

1400 DELL AVENUE
CAMPBELL, CALIFORNIA 95008
(408) 378-6540

MODEL 1710A

Distortion Measurement System

- ★ Measure .002% distortion in less than 5 seconds.
- ★ Measure ac voltage with 2% accuracy.
- ★ Measure ratios with 100 dB dynamic range.
- ★ Ultra-low distortion 10 Hz to 110 kHz oscillator.

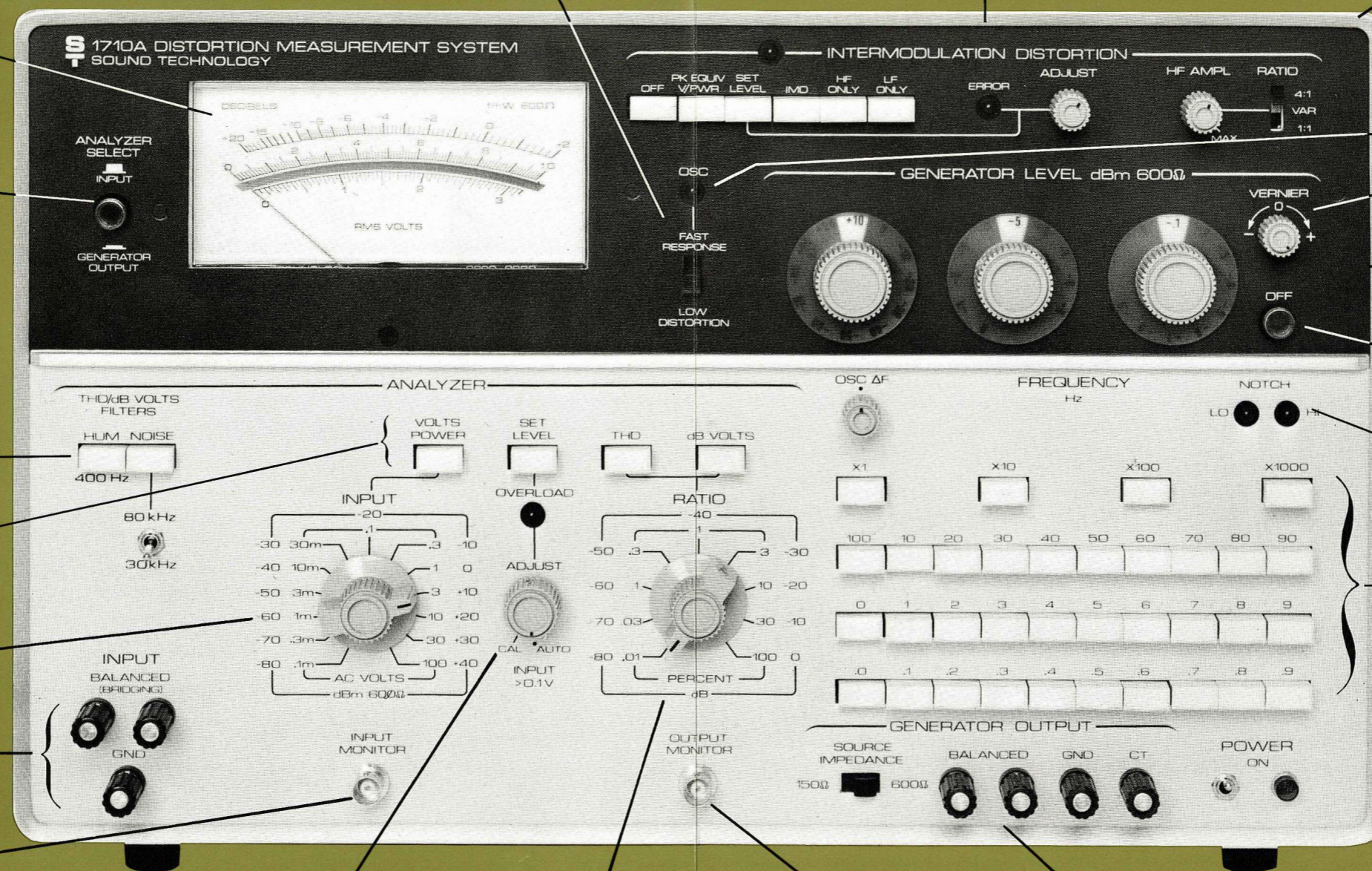
Switch lets you choose ultra-low distortion (*less than 5 sec. settling time*) or fast response operation.

Intermodulation Distortion Analyzer optionally available. (See 1700B Option 004 data sheet.)

No manual nulling controls are required — the 1710A is always in auto-null, reaches a null in less than 5 seconds.

0.5% taut band meter monitors voltage, power, distortion or dB ratio.

Measure the generator signal at the load with the push of a button.



Oscillator distortion is typically .001% in low-distortion mode.

±1 dB Vernier adds fine level control.

Internal oscillator provides the test signal. Level adjustable from +26 dBm to -89.9 dBm in 0.1 dB steps.

Pushbutton lets you turn the oscillator off for quick signal-to-noise ratio measurement.

Tuning indicators help you when measuring distortion of an external source.

Simultaneously select oscillator and analyzer frequency with fast-to-use pushbuttons. Range is 10 Hz to 110 kHz

Selectable 18 dB per octave filters reject hum and high frequency noise.

Fast pushbutton operation lets you set level, measure voltage or power, then measure distortion — no range changing required.

Measure voltage or power from 10 Hz to 110 kHz with 2% accuracy.

100K Ω Balanced Input lets you measure strapped amplifiers or amplifiers with floating outputs, breaks ground loops.

Replica of input signal, referenced to ground, always available.

Set 100% reference level on signals from 100V down to 0.1V. Automatic Set Level is optionally available. (See 1700B Option 003 data sheet.)

Measure distortion down to .002%, voltage or signal-to-noise ratios with 100 dB dynamic range.

Distortion products are continuously available for scope viewing

Balanced 150Ω or 600Ω Generator output.

Specifications

ANALYZER

Input Impedance: Balanced, 100k Ω shunted by < 400 pf, each side to ground. (400 pf includes capacitance of input rf filter.)

Input Monitor: Reproduction of input signal referenced to ground, 0.316 Vrms corresponds to full scale meter deflection.

Output Monitor: Reproduction of distortion products when measuring distortion, input signal when measuring ratios (dB VOLTS). 31.6 mVrms corresponds to full scale meter deflection.

Meter Response: Responds to average value of measured waveform. Calibrated r.m.s.

Common Mode Rejection: > 40 dB at 60 Hz. Decreases to 25 dB in distortion or ratio (dB VOLTS) modes with SET LEVEL ADJ. fully CW. Remains > 40 dB with AUTO SET LEVEL (Opt. 003).

Maximum Common Mode Voltage: Equal to input voltage range setting or 1V, whichever is greater.

Input Filters: Usable on distortion or ratio (dB VOLTS) functions.

Noise: 3 dB down at 30 kHz or 80 kHz, 18 dB/octave rolloff.

Hum: 3 dB down at 400 Hz, 18 dB/octave rolloff. 60 Hz rejection > 40 dB.

Residual Noise (referred to input): < 5 μ V with 30 kHz noise filter, < 8 μ V with 80 kHz noise filter, < 15 μ V with noise filter out.

TOTAL HARMONIC DISTORTION MEASUREMENT

Fundamental Frequency Range: 10 Hz to 110 kHz in 4 overlapping ranges with 3 digit resolution. Distortion analyzer is tuned simultaneously with oscillator.

Frequency Calibration Accuracy: Better than $\pm 2\%$ of selected frequency.

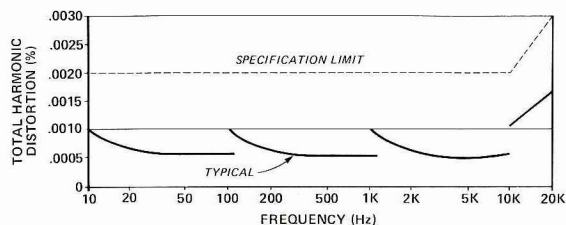
Input Voltage for 100% Set Level: 0.1V to 100V

Distortion Range: .01% to 100% full scale in 9 ranges

Distortion Measurement Accuracy Including Autonull Error for Harmonics to 300 kHz:

Fundamental Frequency	2nd through 5th Harmonic Accuracy
10 Hz - 20 kHz	± 1 dB
20.1 kHz - 50 kHz	± 2 dB
50.1 kHz - 110 kHz	± 3 dB

Residual Distortion:



Above 20 kHz, residual distortion is .007% to 30 kHz, < .02% to 50 kHz, < .05% to 80 kHz, < .1% to 100 kHz.

Noise: If distortion products of the signal under analysis are significant, residual noise will be reduced by the average responding meter. Worst case noise (80 kHz filter in) is .0025% to 10 kHz, .003% to 20 kHz with the measured signal greater than 0.3 Vrms. At lower signal levels the noise spec of the voltmeter applies.

Automatic Null: Operates on all distortion ranges. Automatic null time < 6 sec when used with internal oscillator.

Fundamental Rejection: > 100 dB

VOLTAGE/POWER MEASUREMENT

Frequency Range: 10 Hz to 110 kHz

Input Range: 100 μ V to 100V full scale (-80 to +40 dBm across 600 Ω) in 13 ranges.

Voltage Accuracy: ± 0.2 dB ($\pm 2\%$) 20 Hz to 20 kHz
 ± 0.6 dB ($\pm 6\%$) 10 Hz to 110 kHz

Note: To use noise or hum filters on voltage measurements and also obtain extended voltage ranges, use dB VOLTS function with SET LEVEL ADJUST control on CAL. (INPUT switch on 0.3V and RATIO switch on -80 dB provides maximum sensitivity of 30 μ V full scale.)

RATIO MEASUREMENT

VOLTAGE/POWER measurement specifications apply with the following additions:

Input Level for 0 dB Reference Set: 0.077V to 77V (-20 to +40 dBm across 600 Ω).

Accuracy: ± 2 dB, 20 Hz to 20 kHz
 ± 6 dB, 10 Hz to 110 kHz

GENERATOR

Frequency Range: 10.0 Hz to 110 kHz in 4 overlapping ranges.

ΔF Control: $\pm \frac{1}{4}$ of least significant digit. (Permits continuous frequency coverage.)

Frequency Accuracy: $\pm 2\%$ of setting, ΔF control centered.

Output Level: Calibrated +26 dBm to -90 dBm (referred to 600 Ω) into 150 Ω or 600 Ω loads.

Output Impedance: 150 or 600 Ω , $\pm 0.1\%$ (< 2.0 Ω on +26 dBm step) balanced and floating.

Frequency Response (referred to 1 kHz):

Balanced Loads: ± 0.1 dB, 10 Hz to 20 kHz, ± 0.25 dB above 20 kHz, all ranges.

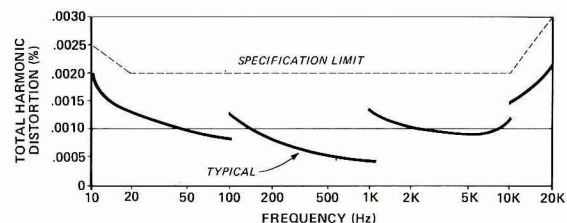
Unbalanced Loads: ± 0.2 dB, 10 Hz to 20 kHz, ± 0.6 dB above 20 kHz, +26 dBm to -80 dBm.

Attenuator Accuracy: ± 0.15 dB (1.5%), any setting.

Balance: > 70 dB to 20 kHz, > 50 dB above 20 kHz.

Distortion (Low Distortion Mode):

Output level to +26 dBm with 600 Ω load, +20 dBm with 150 Ω load:



Above 20 kHz, distortion is < .007% to 30 kHz, .02% to 50 kHz, .15% to 80 kHz < .35% to 100 kHz. At +26 dBm, 150 Ω load, distortion increases by a factor of approximately 2 above 5 kHz.

Hum and Noise: 120 dB below 0 dBm, 600 Ω , balanced load (100 dB for unbalanced loads) or 100 dB below signal level, whichever is greater.

GENERAL

Dimensions: 17.2 inches wide, 11 inches high, 14.5 inches deep.

Power: 90 to 130V or 180 to 260V, 50 to 60 Hz, 36 watts.

Weight: 25 lb., Rack Mount option adds 1.5 lb., IM option adds 5 lb.

Shipping Weight: 33 lb., Rack Mount adds 2 lb., IM adds 5 lb.

• 2 year parts and labor warranty.