



General Radio

WARRANTY

This product is warranted to be free from defects in material and workmanship and, when properly used, will perform in accordance with specifications. Any GR-manufactured instrument, module, or part found not to meet this standard within a period of one year after original shipment will be repaired or replaced at no charge when returned to a GR service facility.

GR policy is to maintain repair capability for a period of ten years after the original shipment and to make this capability available at the then prevailing schedule of charges for any product returned to a GR service facility. Changes in the product not approved by GR shall void this warranty. GR is not liable for consequential damages.

This warranty is in lieu of all other warranties, expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Type 1390-B Random-Noise Generator

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(Includes 1390-P2)

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Concord, Massachusetts, U.S.A. 01742

Form 1390-0100-O

October, 1975

ID-5968

SPECIFICATIONS

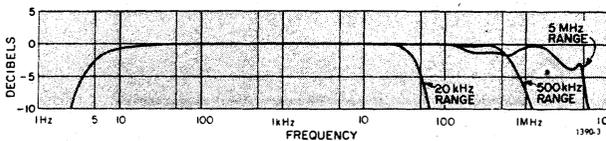
Frequency Range: 5 Hz to 5 MHz.

Output: VOLTAGE: Max open-circuit output is at least 3 V for 20-kHz range, 2 V for 500-kHz range, and 1 V for 5-MHz range. IMPEDANCE: Source impedance for max output is approx 900 Ω . Output is taken from a 2500- Ω potentiometer. Source impedance for attenuated output is 200 Ω . One output terminal is grounded.

Spectrum: See spectrum-level curves and following table. Note: Spectrum level is shown with constant-Hz-bandwidth analysis, "white" noise being ideally flat. (Pink noise would slope down at 10 dB per decade.)

Range	Typical Spectrum Level (with 1-V rms output)	Spectrum Level Uniformity *
20 kHz	5 mV for 1-Hz band	within ± 1 dB, 20 Hz to 20 kHz
500 kHz	1.2 mV for 1-Hz band	within ± 3 dB, 20 Hz to 500 kHz
5 MHz	0.6 mV for 1 Hz band	within ± 8 dB, 500 kHz to 5 MHz

* Noise energy also beyond these limits. Level is down 3 dB at 5 Hz.



Typical spectrum-level characteristics.

Waveform: Noise source has good normal, or Gaussian, distribution of amplitudes for ranges of the frequency spectrum that are narrow compared with the band selected. Over wide ranges the distribution is less symmetrical because of dissymmetry introduced by the gas tube. Some clipping occurs on the 500-kHz and 5-MHz ranges.

Voltmeter: Rectifier-type averaging meter measures output. It is calibrated to read rms value of noise.

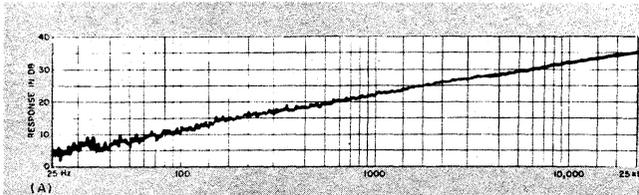
Attenuator: Multiplying factors of 1.0, 0.1, 0.01, 0.001, and 0.0001. Accurate to $\pm 3\%$ to 100 kHz, within $\pm 10\%$ to 5 MHz.

Available: Rack-adaptor set (19x7 in.); 1390-P2 PINK-NOISE FILTER.

Power: 105 to 125 or 210 to 250 V, 50 to 400 Hz, 50 W.

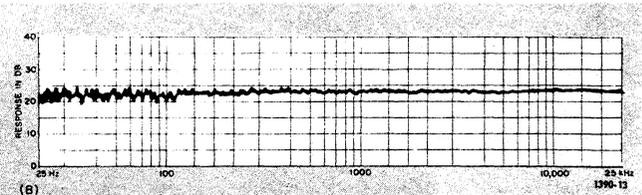
Mechanical: Convertible bench cabinet. DIMENSIONS (wx hxd): Bench, 12.75x7.5x9.75 in. (324x191x248 mm). WEIGHT: 12 lb (5.5 kg) net, 16 lb (7.5 kg) shipping.

Description	Catalog Number
1390-B Random-Noise Generator	
115-V Model	1390-9702
230-V Model	1390-9703
Rack Adaptor Set (7 in.)	0480-9842



(A) Output (white noise) of the 1390-B Random-Noise Generator and

(B) output (pink noise) after filtering by the 1390-P2 Pink-Noise Filter, as measured by a one-third-octave band analyzer.



1390-P2 Pink-Noise Filter

Frequency Response: Sloping -3 dB per octave from 20 Hz to 20 kHz, -6 dB per octave above 20 kHz. Output voltage is approx -5 dB with respect to the input voltage at 20 Hz and -35 dB at 20 kHz. It lies within 1 dB of the straight line connecting these two points on a graph of output in decibels vs log frequency.

Over-all Output Level: When the filter is used with the random-noise generator set for the 20-kHz range, the output voltage of the filter is approx 30 dB below its input, and the voltage level in each one-third-octave band is approx 17 dB below that. Thus, when the output meter of the generator indicates 3 V, the output of the filter is approx 0.1 V, and the level in each one-third-octave band is approx 15 mV.

Input Impedance: The filter should be driven from a source whose impedance is 1 k Ω or less. Input impedance is variable

from 6.5 k Ω + load resistance at zero frequency to 6.7 k Ω at high frequencies.

Output Impedance: The filter should not be operated into a load of less than 20 k Ω . Internal output impedance is variable from 6.5 k Ω + source resistance at low frequencies to approx 200 Ω at high frequencies.

Max Input Voltage: 15 V rms.

Terminals: Input terminals are recessed banana pins on $\frac{3}{4}$ -in. spacing at rear of unit. Output terminals are jack-top binding posts with $\frac{3}{4}$ -in. spacing.

Mechanical: Plug-in unit housing. DIMENSIONS (wxhxd): 1.38x 5x2.87 in. (35x127x73 mm). WEIGHT: 6 oz (0.2 kg) net, 4 lb (1.9 kg) shipping.

Description	Catalog Number
1390-P2 Pink-Noise Filter	1390-9602