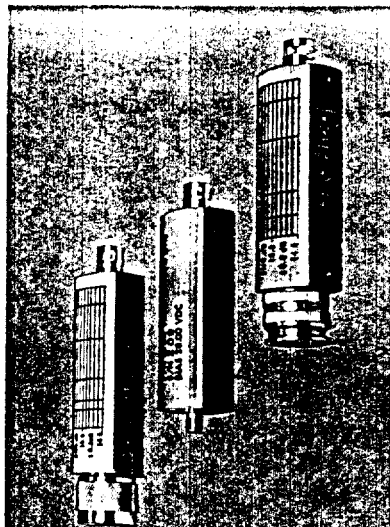
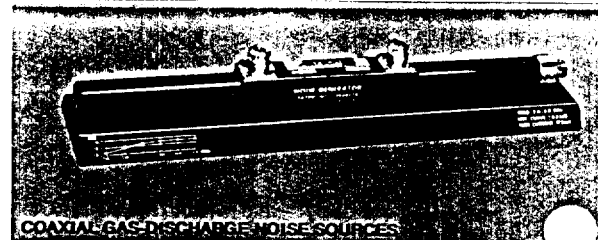


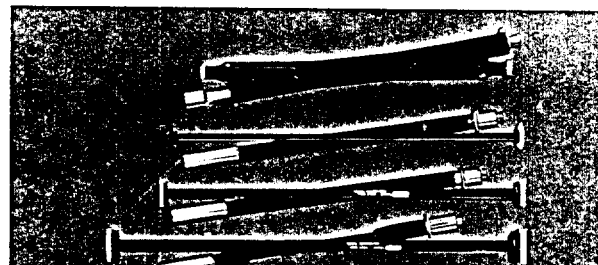
7009 HOT/COLD STANDARD



SERIES 76 SOLID-STATE NOISE SOURCES



COAXIAL GAS-DISCHARGE NOISE SOURCES



WAVEGUIDE GAS-DISCHARGE NOISE SOURCES

Noise Sources

FEATURES . . .

- Complete capability including noise-source standards.
- DC to 40GHz coverage.
- Calibration service traceable to NBS available.

HOT/COLD STANDARD P/N 7009 — When used with the 13610 Precision Test Receiver (see pages 6 and 7), the AILTECH 7009 provides a noise-figure measurement system capable of better than ± 0.1 dB accuracy. The noise-source standard employs two resistive terminations: one is immersed in liquid nitrogen (77.3K), the other is in a proportionally-controlled oven set to the temperature of boiling water (373.K). For the utmost in accuracy and repeatability, front-panel connections are via 14 mm precision connectors. The terminating impedances are carefully controlled so that they track each other, in both magnitude and phase, over the full frequency range of the instrument. Thus, mismatch uncertainties are virtually eliminated.

SOLID-STATE NOISE SOURCES

Three coaxial noise sources (AILTECH 7615, 7616, and 7617) cover the frequency range from 10 MHz to 18 GHz. Every source in this series is calibrated against a known noise-source standard that is traceable to the National Bureau of Standards (N.B.S.) where applicable. These solid-state devices are small in size and high in reliability. The noise-generating diode is isolated from the output by 12 to 20 dB; consequently, there are almost no mismatch errors as the source is switched on and off, and no destructive transients are present in the output.

GAS-DISCHARGE NOISE SOURCE

All gas-discharge noise sources in the AILTECH 70 Series are two-port devices, and the output may be taken from either one. The other port must be terminated in a low-SWR load. Two noise sources (AILTECH 7010 and 7012), cover the frequency range from 200 MHz to 5 GHz. Data is provided on their Excess Noise Ratio (ENR) vs. Frequency, including correction data for coupling losses. Six waveguide noise sources cover the frequency range from 5.85 to 40 GHz. They employ argon-filled, gas-discharge tubes mounted in sections of standard waveguide at a slant angle of approximately 10 degrees. All waveguide noise sources, except the AILTECH 7096, are supplied with low-SWR terminations installed.

CALIBRATION SERVICE

AILTECH provides excess-noise-ratio (ENR) calibrations to an absolute accuracy of ± 0.11 dB at specific frequencies. Results are directly traceable to N.B.S. where primary standards have been established.

Your noise sources will be calibrated using the highly regarded AILTECH 82 Noise Temperature Calibration System. It can accommodate noise sources in several waveguide sizes as well as coaxial types from 10 MHz to 18 GHz. (see pages 12 and 13).

Consult the factory for more information on this unique, valuable service.

7009 HOT/COLD NOISE STANDARD SPECIFICATIONS

Frequency Range	0 to 9 GHz
VSWR	1.15 maximum
Impedance tracking	The distance between the complex impedance points of the hot and cold terminations (plotted on a Smith chart) is less than the diameter of a circle corresponding to an SWR of 1.05 from DC to 7GHz, and 1.10 from 7.1 to 9 GHz.
Termination temperature	Hot 373.2 \pm 1 kelvins Cold 77.3 \pm 1, \pm 0 kelvins
Noise Temperature	Termination temperature \pm frequency correction.
Output connectors	14 mm precision (GR-900BT)
Line Power	115/230 V \pm 10%, 50 to 400 Hz, 20 watts (nominal)
Size	9¼" w x 15" h x 14¾" d (23.5 x 38.1 x 32.5 cm)
Weight	16 lbs. (7.3 Kg) net, 27 lbs. (12.3 Kg) shipping weight

SERIES 76 SOLID-STATE NOISE SOURCES SPECIFICATIONS

Part Number	7615	7616	7617
Frequency Range (GHz)	0.01-1.5	1-12.4	12.4-18
Excess Noise Ratio (dB)	15.5 \pm 0.5	15.5 \pm 0.5	15.5 \pm 1.0
Calibration Freq. (GHz)	0.03, 0.3 1.0, 1.5	1, 2, 3.95, 8.2, 12.4	12.4, 15, 18
ENR Accuracy* (dB)	\pm 0.3	\pm 0.3	\pm 0.25
Temperature Sensitivity	0.01 dB/°C	0.01 dB/°C	0.01 dB/°C
Voltage Sensitivity	0.1 dB/%	0.1 dB/%	0.01 dB/%
VSWR (maximum)	1.2	1.2	1.3
Output Connector	N Male	N Male	OSM Female
Input Connector	BNC Female	BNC Female	BNC Female
Input Requirements	28V @ 30ma	28V @ 30ma	28V @ 30ma

*Accuracy of the ENR at the calibration frequencies. Data is plotted on a graph permanently marked on the body of the noise source.

HIGH-ENR NOISE SOURCES

High-ENR, solid-state noise sources (**AILTECH 7650 and 7660**) are available for use with the AILTECH 7300-Series, System Noise Monitors. They cover 10 MHz to 18 GHz with typically a 15% bandwidth, and can provide excess noise ratios of as much as 37 dB.

SERIES 70 GAS-DISCHARGE NOISE SOURCES SPECIFICATIONS

Part Number	7010	7012	7050	7051	7052	7091	7053	7096
Freq. Range (GHz)	0.2 - 2.6	2-5	5.85 - 8.2	7.05 - 10.0	8.2 - 12.4	12.4 - 18	18 - 26.5	26.5 - 40
ENR(dB), \pm 0.25dB	15.65	15.75	15.65	15.7	15.7	16.1	16.1	16.3
VSWR ON (nom.)	1.15	1.5	1.3	1.3	1.3	1.3	1.35	1.3
VSWR OFF (nom.)	1.3	2	1.2	1.2	1.2	1.2	1.35	1.2
Output Connector	Type N Female	Type N Female	WR-137	WR-112	WR-90	WR-62	WR-42	WR-28

7111 POWER SUPPLY FOR GAS-DISCHARGE NOISE SOURCES

The AILTECH 7111 Power Supply provides sufficient power for all AILTECH Gas-Discharge Noise Sources. Six-foot cables are furnished for mating with all AILTECH 70-Series noise sources. Line power of 115/230V \pm 10%, 50-60 Hz, 50 watts nominal is required. Size of the unit is 8¾ w x 9¼ h x 10½ d (22.2 x 23.5 x 26.7 cm). Weight is 15 pounds (6.8 Kg).