

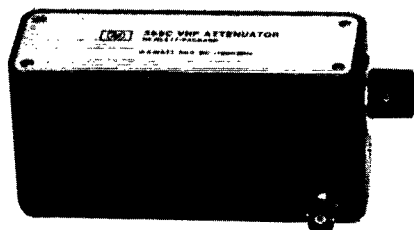
MICROWAVE TEST EQUIPMENT

Coaxial Step Attenuators, Attenuator/Switch Driver

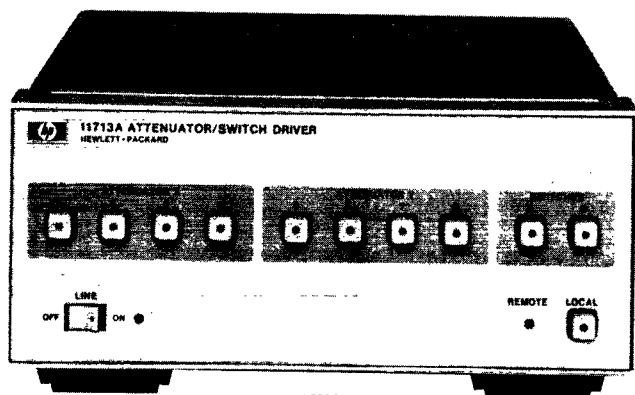
Models 355 Series, 8494/5/6/7 Series, 11713A, 11716A/B, 11717A

- Excellent repeatability
- Manual and programmable
- Calibration data available

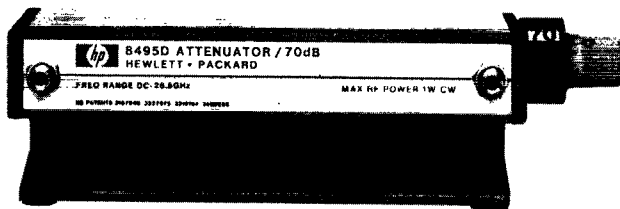
- 5-million-cycle-per-section reliability



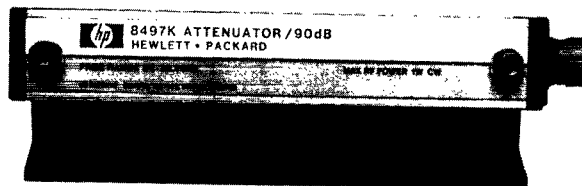
HP 355C



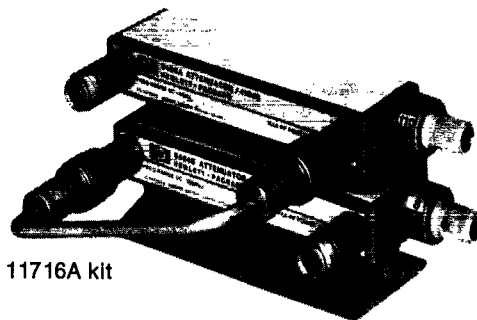
HP 11713A



HP 8495D option 004



HP 8497K option 004



HP 11716A kit

HP 355C/D/E/F Manual and Programmable Step Attenuators, dc to 1000 MHz

Precision attenuation from dc to 1000 MHz is available with these Hewlett-Packard attenuators. HP 355C/E provide 0 to 12 dB in 1-dB steps and HP 355D/F provide 0 to 120 dB in 10-dB steps. For the HP 355E and 355F models, attenuation programming is done through a 7-pin connector. All standard models are equipped with BNC connectors.

HP 8494A/B/G/H, 8495A/B/D/G/H/K, 8496A/B/G/H, 8497K Manual and Programmable Step Attenuators, dc to 26.5 GHz

Four attenuation ranges are available: 0 to 11 dB in 1-dB steps (HP 8494), 0 to 70 dB in 10-dB steps (HP 8495), 0 to 110 dB in 10-dB steps (HP 8496) and 0 to 90 dB in 10 dB steps (HP 8497). There is choice of three connectors: Type N (f), SMA (f), and APC-7 (APC-3.5 on HP 8495D/K and 8497K only). Manual and programmable versions are available as well as coverage of three frequency ranges (dc-4 GHz, dc-18 GHz, and dc-26.5 GHz). Calibration data (SWR and attenuation) is available on the HP 8494/5/6/7 models as option 890. The data is generated by an automatic network analyzer test system and is given for each step of the attenuator at 14 frequencies (dc-4 GHz models), 47 frequencies (dc-18 GHz models), or 72 frequencies (dc-26.5 GHz); see frequency lists on next page. This data is very useful for improving measurement accuracy in manual and automated test systems.

Each attenuator consists of three or four attenuation sections connected in cascade. Attenuator sections are inserted and removed by cam-actuated "edge line" contacts. These contacts are gold-plated leaf-springs that ensure long life (over a million steps) and high repeatability (typically 0.03 dB).

The G, H, and K programmable models offer the same high performance as the manual models with the addition of fast switching solenoids. Attenuation programming is done through a 12-pin con-

connector. For ease of connection to the driving circuit, each attenuator is provided with a five-foot cable assembly that includes the mating connector. With the HP 11713A Attenuator Driver, the attenuators are easily integrated into a Hewlett-Packard Interface Bus (HP-IB) automated system.

HP 11716A/B Interconnection Kit

Convenient interconnection of 1-dB and 10-dB models is provided with the HP 11716A/B. These kits provide a rigid RF cable, mounting bracket, and screws to connect any pair of HP 8494/5/6 attenuators in series (see picture above). Attenuators must be ordered separately.

Equivalent versions of these attenuators for incorporation in equipment (i.e., "OEM") are available under model numbers HP 33320, 33321, 33322 and 33323. See following pages.

HP 11713A Attenuator/Switch Driver

This instrument has all of the necessary features to provide HP-IB control of up to two programmable attenuators of the HP 8494/5/6/7 or HP 33320/1/2/3 series and concurrently up to two electro-mechanical switches (e.g., HP 8761B or 33311 series). Alternatively, the HP 11713A can be used to supply +24 V common and ten pairs of transistor switches (total current less than 1.25A) to control up to ten relays. The HP 11713A includes an integral power supply with short circuit protection that can simultaneously provide 125 milliamps at 24 volts to all contacts for control of the attenuators and switches, so no external power supply is needed. For convenience in connecting HP 8490 or HP 33320-series Attenuators, two 5-foot cables with appropriate connectors are supplied.

A local mode and front-panel push buttons allow switches and attenuator sections to be operated manually. Switching time for the drivers is less than 10 milliseconds.

Ordering Information

	Price
HP 11713A Attenuator/Switch Driver	\$1650
HP 11716A Interconnection Kit for Type N (f) Connectors	\$200
HP 11716B Interconnection Kit for APC-7 Connectors	\$290
HP 11717A Attenuator/Switch Rack Mount Support Kit	\$50