

Agilent RF & Microwave Attenuators

Performance you can count on



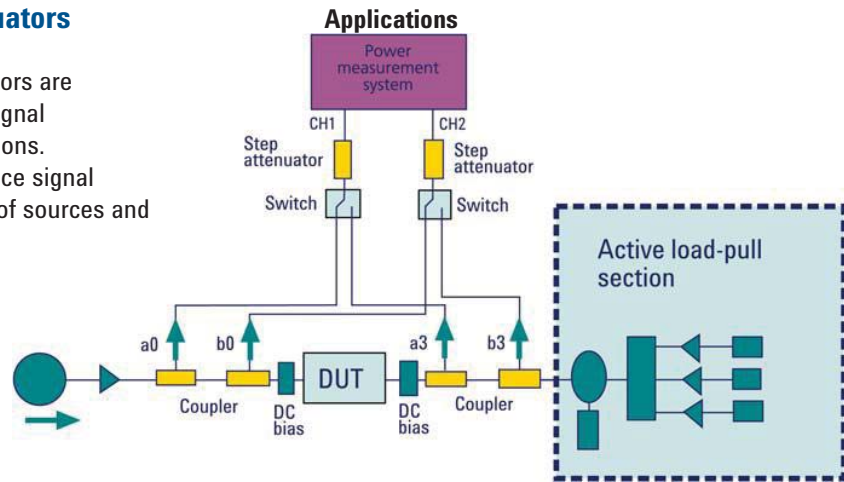
KEY FEATURES

- High reliability and exceptional repeatability reduce downtime
- Excellent RF specifications optimize test system measurement capability
- Broad portfolio of attenuation and connector options provide configuration flexibility



Agilent RF & Microwave Attenuators

Agilent coaxial fixed and step attenuators are designed for use in a wide variety of signal conditioning and level control applications. Attenuators are generally used to reduce signal levels, improve matching impedances of sources and loads, and measure the gain or loss of two-port devices.



Coaxial Fixed Attenuators

Agilent coaxial fixed attenuators provide precise attenuation, flat frequency response and low SWR over broad frequency range. These attenuators are available in nominal attenuations of 3, 6, 10, 20, 30, 40, 50 and 60 dB to cater to various applications and setups.

Coaxial Fixed Attenuators

| Model number | Frequency | Attenuation Accuracy | | | | | | | | Maximum SWR | Maximum input average power (W) | Maximum input peak power (W) | RF connectors |
|--------------|----------------|----------------------|------|-------|-------|-------|-------|-------|-------|-------------|---------------------------------|------------------------------|---------------|
| | | 3 dB | 6 dB | 10 dB | 20 dB | 30 dB | 40 dB | 50 dB | 60 dB | | | | |
| 8491A | DC to 12.4 GHz | 0.3 | 0.3 | 0.5 | 0.5 | 1.0 | 1.5 | 1.5 | 2.0 | 1.30 | 2 | 100 | N (m,f) |
| 8493A | DC to 12.4 GHz | 0.3 | 0.3 | 0.5 | 0.5 | 1.0 | - | - | - | 1.30 | 2 | 100 | SMA (m,f) |
| 8491B | DC to 18 GHz | 0.3 | 0.4 | 0.6 | 1.0 | 1.0 | 1.5 | 1.5 | 2.0 | 1.50 | 2 | 100 | N (m,f) |
| 8493B | DC to 18 GHz | 0.3 | 0.4 | 0.6 | 1.0 | 1.0 | - | - | - | 1.50 | 2 | 100 | SMA (m,f) |
| 8498A | DC to 18 GHz | - | - | - | - | 1.0 | - | - | - | 1.30 | 25 | 125 | N (m,f) |
| 8493C | DC to 26.5 GHz | 1.0 | 0.6 | 0.5 | 0.6 | 1.0 | 1.3 | - | - | 1.25 | 2 | 100 | 3.5 mm (m,f) |
| 8490D | DC to 50 GHz | 1.8 | 1.8 | 1.3 | 1.7 | 1.7 | 2.5 | - | - | 1.45 | 1 | 100 | 2.4 mm (m,f) |
| 8490G | DC to 67 GHz | 1.8 | 1.8 | 1.3 | 1.7 | 1.7 | 2.5 | - | - | 1.45 | 1 | 100 | 1.95 mm |

Manual Step Attenuators

Agilent manual step attenuators offer fast, precise signal-level control up to 26.5 GHz. Unmatched attenuation repeatability of less than 0.03 dB up to 5 million cycles per section ensures low measurement uncertainty. Attenuation range of 121 dB in 1 dB step can be achieved by cascading 2 attenuators in series.

| Manual Step Attenuators | | | | | | | | | |
|-------------------------|----------------|------------------------|-----------------------|-----------------------------|-------------|---------------------------------|------------------------------|---|--|
| Model number | Frequency | Attenuation range (dB) | Attenuation step (dB) | Insertion loss (dB) at 0 dB | Maximum SWR | Maximum input average power (W) | Maximum input peak power (W) | Operating life (n million cycles/section) | Repeatability (dB) |
| 8494A | DC to 4 GHz | 0 to 11 | 1 | 0.96 | 1.50 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495A | DC to 4 GHz | 0 to 70 | 10 | 0.68 | 1.35 | 1 | 100 | 5 | ± 0.03 dB max |
| 8496A | DC to 4 GHz | 0 to 110 | 10 | 0.96 | 1.50 | 1 | 100 | 5 | ± 0.03 dB max |
| 8494B | DC to 18 GHz | 0 to 11 | 1 | 2.22 | 1.90 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495B | DC to 18 GHz | 0 to 70 | 10 | 1.66 | 1.70 | 1 | 100 | 5 | ± 0.03 dB max |
| 8496B | DC to 18 GHz | 0 to 110 | 10 | 2.22 | 1.90 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495D | DC to 26.5 GHz | 0 to 70 | 10 | 3.95 | 2.20 | 1 | 100 | 5 | ± 0.03 dB max to 18 GHz, ± 0.05 dB max to 26.5 GHz |

*All product models listed above offer RF connector options for N(f) / SMA(f) / APC-7 except 8495D which only offer 3.5 mm (f) RF connectors.

Programmable Step Attenuators

Agilent programmable step attenuators offer fast, precise signal-level control up to 50 GHz, with switching time of less than 20 ms. Unmatched attenuation repeatability of less than 0.03 dB up to 5 million cycles per section ensures low measurement uncertainty and reduces calibration cycles when installed into test systems. Automatic GPIB/USB/LAN drive control is achieved with the 11713B/C attenuator/switch driver.

| Programmable Step Attenuators | | | | | | | | | |
|-------------------------------|----------------|------------------------|-----------------------|----------------------------|-------------|---------------------------------|------------------------------|---|---|
| Model Number | Frequency | Attenuation Range (dB) | Attenuation Step (dB) | Insertion Loss (dB) @ 0 dB | Maximum SWR | Maximum input average power (W) | Maximum input peak power (W) | Operating Life (n million cycles/section) | Repeatability (dB) |
| 8494G | DC to 4 GHz | 0 to 11 | 1 | 0.96 | 1.50 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495G | DC to 4 GHz | 0 to 70 | 10 | 0.68 | 1.35 | 1 | 100 | 5 | ± 0.03 dB max |
| 8496G | DC to 4 GHz | 0 to 110 | 10 | 0.96 | 1.50 | 1 | 100 | 5 | ± 0.03 dB max |
| 8494H | DC to 18 GHz | 0 to 11 | 1 | 2.22 | 1.90 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495H | DC to 18 GHz | 0 to 70 | 10 | 1.66 | 1.70 | 1 | 100 | 5 | ± 0.03 dB max |
| 8496H | DC to 18 GHz | 0 to 110 | 10 | 2.22 | 1.90 | 1 | 100 | 5 | ± 0.03 dB max |
| 8495K | DC to 26.5 GHz | 0 to 70 | 10 | 3.95 | 2.20 | 1 | 100 | 5 | ± 0.03 dB max to 18 GHz, ± 0.05 dB max to 26.5 GHz |
| 8497K | DC to 26.5 GHz | 0 to 90 | 10 | 2.79 | 1.80 | 1 | 100 | 5 | ± 0.03 dB max to 18 GHz, ± 0.05 dB max to 26.5 GHz |
| 84904K | DC to 26.5 GHz | 0 to 11 | 1 | 1.86 | 2.00 | 1 | 50 | 5 | ± 0.03 dB max |
| 84906K | DC to 26.5 GHz | 0 to 90 | 10 | 1.86 | 2.00 | 1 | 50 | 5 | ± 0.03 dB max |
| 84907K | DC to 26.5 GHz | 0 to 70 | 10 | 1.40 | 1.90 | 1 | 50 | 5 | ± 0.03 dB max |
| 84904L | DC to 40 GHz | 0 to 11 | 1 | 2.40 | 2.00 | 1 | 50 | 5 | ± 0.03 dB max |
| 84906L | DC to 40 GHz | 0 to 90 | 10 | 2.40 | 2.00 | 1 | 50 | 5 | ± 0.03 dB max |
| 84907L | DC to 40 GHz | 0 to 70 | 10 | 1.80 | 1.90 | 1 | 50 | 5 | ± 0.03 dB max |
| 84904M | DC to 50 GHz | 0 to 11 | 1 | 3.00 | 3.00 | 1 | 50 | 5 | ± 0.03 dB |
| 84905M | DC to 50 GHz | 0 to 60 | 10 | 2.60 | 2.60 | 1 | 50 | 5 | ± 0.03 dB |
| 84908M | DC to 50 GHz | 0 to 65 | 5 | 3.00 | 3.00 | 1 | 50 | 5 | ± 0.03 dB |

Interconnect Kits

11716A Type-N interconnect kit

11716C SMA interconnect kit

11716D 2.9 mm interconnect kit

11716E 3.5 mm interconnect kit

11716F 2.4 mm interconnect kit

11716A/C/D/E/F interconnect kits can be used to connect any two of the Agilent 8494/95/96, 84904/8M, 84904/6L, or 84904/6K attenuators in series to achieve broader attenuation ranges with 1 dB attenuation step.

| Attenuator | Interconnection Kit |
|---------------------------------|---------------------|
| 8494x, 8495x, 8496x | 11716A/C |
| 84904L, 84906L, Option 006, 106 | 11716D |
| 84904L, 84906L, Option 101, 100 | 11716F |
| 84904K, 84906K | 11716E |

| Attenuator type | Frequency range | Attenuator 1 | Attenuator 2 | Attenuation range | Attenuation step |
|-----------------|-----------------|--------------|--------------|-------------------|------------------|
| Manual | DC to 4 GHz | 8494A | 8495A | 81 | 1 |
| Manual | DC to 4 GHz | 8494A | 8496A | 121 | 1 |
| Manual | DC to 18 GHz | 8494B | 8495B | 84 | 1 |
| Manual | DC to 18 GHz | 8494B | 8496B | 121 | 1 |
| Programmable | DC to 4 GHz | 8494G | 8495G | 81 | 1 |
| Programmable | DC to 4 GHz | 8494G | 8496G | 121 | 1 |
| Programmable | DC to 18 GHz | 8494H | 8495H | 81 | 1 |

Attenuator Sets

Sets of four coaxial fixed attenuators with attenuations of 3, 6, 10 and 20 dB are provided in a walnut accessory case. These sets are ideal for calibration labs or where precise knowledge of attenuation and SWR is desired.

| Attenuator sets | Coaxial fixed attenuator model number | Attenuation |
|-----------------|---------------------------------------|--------------------|
| 11581A | 8491A | 3, 6, 10 and 20 dB |
| 11582A | 8491B | 3, 6, 10 and 20 dB |
| 11853C | 8493C | 3, 6, 10 and 20 dB |



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Related Products

11713A/B/C attenuator/switch driver

34980A multifunction switch/measurement unit

L4445A microwave switch/attenuator driver

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