



TYPE 874-GAL ADJUSTABLE ATTENUATOR

DESCRIPTION

The Type 874-GAL Adjustable Attenuator is of the wave-guide-below-cutoff type operating in the $TE_{1,1}$ mode (inductive coupling). The waveguide is excited by a coaxial transmission line, as shown in Figure 1, and the output voltage is induced in a loop mounted on a sliding plunger. One end of the loop is terminated in a 50-ohm resistor and the other is connected to the output cable. This arrangement makes the output impedance of the attenuator approximately 50 ohms. The attenuation is varied by rotating the barrel which moves the plunger and loop along the tube. The barrel is calibrated in relative attenuation in db. The attenuators can be adjusted from the stop at the minimum attenuation position, which occurs at about -9 db on the calibrated scale, to the stop at the maximum attenuation end of the range, which occurs at about 140 db on the scale. Each revolution of the barrel changes the attenuation 20 db. In most applications the maximum usable attenuation is limited by leakage from various parts of the driving circuit and not by the range of the attenuator. In this type of variable attenuator, as the attenuation is varied the phase at the output connection is essentially constant with respect to the input signal phase.

The method of coupling to the coaxial line permits the attenuator to be used as a standard calibrated attenuator or as a device to couple a small amount of energy from a high-level circuit for monitoring or measuring purposes without introducing a large discontinuity in the main line.

The Type 874-GAL Coaxial Attenuator employs the new Type 874-BL Locking Coaxial Connectors. These connectors can be used interchangeably with the standard Type 874 Connectors. When mated with another locking connector, a firm mechanical coupling of the two is achieved when the coupling shell is engaged. The shielding is also improved significantly, and, in general, the leakage is reduced by at least 50 db.

The "quick-disconnect" feature of the standard Type 874 Coaxial Connectors is retained in the locking type if the coupling shell is not engaged. However, in this case the shielding is not as effective.