ABSTRACT

A LOW COST DIGITAL AMPLITUDE REGULATOR

Apparatus for digital amplitude regulation is disclosed, for use as a volume control or the like, utilizing pulse width modulation to control signal transmission through a two terminal non-linear element, the resistance of which varies with current, e.g., a diode (74) or diode like element. A stream of pulses (54), the duty cycle of which is variable and digitally controlled, is filtered (56,58) to produce a quasi-continuously variable reference signal (50). The value of the reference signal regulates gain by controlling the component of the signal (65) of interest that is actually available for amplification. For low cost implementation in a system already employing a microprocessor (52) or microcomputer the determinative duty cycle can be derived under software control and supplied as an output from a single latchable output pin (54). In an exemplary implementation, a derived DC component of the variable duty cycle pulses controls the DC output voltage from a voltage divider (62,64) and is used to regulate the magnitude of a series of fixed magnitude pulses (65). Additionally, the use of an energy storing type filter (56,58) allows the continuous stream of variable duty cycle pulses to be momentarily interrupted so that a pin used for supplying the pulses can be used for the performance of additional functions without affecting the perceived volume level.

Figure 1

This Sheet Has Been Replaced

