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(54) Title: DYNAMICALLY PROGRAMMABLE MAGNETO-RESISTIVE HEAD WRITE AND READ BIAS CURRENTS

(57) Abstract

Apparatus and method for dynamically programming the magnitude of read bias and write currents in a disc drive head (30A, 30B). A digital input value is provided to a register (80) of a digital to analog converter (76, 78), the digital input value indicative of the desired magnitude of the head current. A multiplier (82) of the digital to analog converter (76, 78) multiplies the digital input value by a reference voltage to generate an output voltage. The differential voltage between the reference voltage and the output voltage controls the source to drain resistance of a transistor (106) connected in series with a preamp voltage source (114, 120) of a preamp circuit (70). By inputting different digital input values, the source to drain resistance of the transistor (106) connected in series with a preamp voltage source (114, 120) of a preamp circuit (70). By inputting different digital input values, the source to drain resistance of the transistor (106), and hence the magnitude of the current generated by the preamp voltage source (114, 120), are precisely controlled. The magnitude of the head current is provided as a multiple of the magnitude of the current generated by the preamp voltage source (114, 120). During a read operation, the read bias current is provided to the head (30A, 30B) and the effects of flux transitions on the read bias current are decoded by a read channel (68) to retrieve the data stored on the disc drive. During a write operation, the polarity of the write current is controlled by a write channel circuit (66) operating in conjunction with the preamp circuit (70) to write the data to the disc (16A, 16B).

