

3.4.5 Read Operation

When the section of tape shown in Figure 3-5C is read, the relative positions of the timing and data track flux reversals ensure that the two signals will be read back 90 degrees out of phase. Therefore, if the tape is read while moving in the same direction as it was written, (i.e., the tape was written, rewound over the head, and read), the TP1 pulses will occur close to maxima of the signals from the data tracks.

In order to read the tape, the signals from the data amplifiers are fed to the inputs of the data buffer, and loaded into the buffer when TP1 occurs.

Figure 3-5A illustrates the timing track, TP0, TP1, and data track 0 signals which are generated when the section of tape shown in Figure 3-5C is read while moving in the same direction as it was written. Note that each TP1 pulse occurs at a maximum of the data track signal, and that the polarity of the data track signal at that time defines the value of the bit that was recorded there.

3.5 MODULE DESCRIPTION

Circuit information for the FLIP CHIP modules used in the TU56 DECtape Transport is cataloged in the DEC *Digital Logic Handbook*, C-105. Schematics of these and noncataloged modules are contained in Appendix A. The following paragraphs describe only the noncataloged modules.

3.5.1 G847 Dual Motor Voltage Control

The G847 Dual Motor Voltage Control module (Drawing B-CS-G847-0-1) selects the voltage level that is applied to the tape reel motors. This module contains two 3-stage circuits for control of the two reel motors.

When the run signal is high, Q1 is biased on. Q2 and Q3 are then, in turn, biased on. With Q3 conducting, a high output voltage (approximately +38V) appears at Eout 1. Diode D4 is then reverse biased following the higher output voltage.

Diodes D2 and D9 ensure that the potentials at the base of Q3 and the collector of Q2 do not exceed their design ratings.

When the run signal is low, Q1, Q2, and Q3 are off and D4 conducts; thus, the lower voltage (approximately +18V) appears at Eout 1. Eout 1 is at +38V during run and brake time and at +18V when drag is required on a particular motor. Eout 1 is also at +18V when the REMOTE/OFF/LOCAL switch (SW2) is in the OFF position.

3.5.2 G848 Motor Control Module

The G848 Motor Control module (Drawing C-CS-G848-0-1) is a transistorized bridge circuit designed to operate an ac tape reel motor from a dc source. The operational ac is obtained from an external 40-Hz clock oscillator, whose OSC0 and OSC1 outputs are 180 degrees out of phase with each other.

The bridge circuit controlling the ac tape motor consists of two PNP transistors (Q5 and Q8) and two NPN transistors (Q6 and Q7). The OFF signal can remove power from the motor for an indefinite period.

Transistor turn-on, RC time delay networks (R15 and C4; R24 and C3; R23 and C2; and R3 and C1) prevent two opposing arms in the bridge network from being biased on at the same time. The time delay from turn-off to turn-on is approximately 1 millisecond.