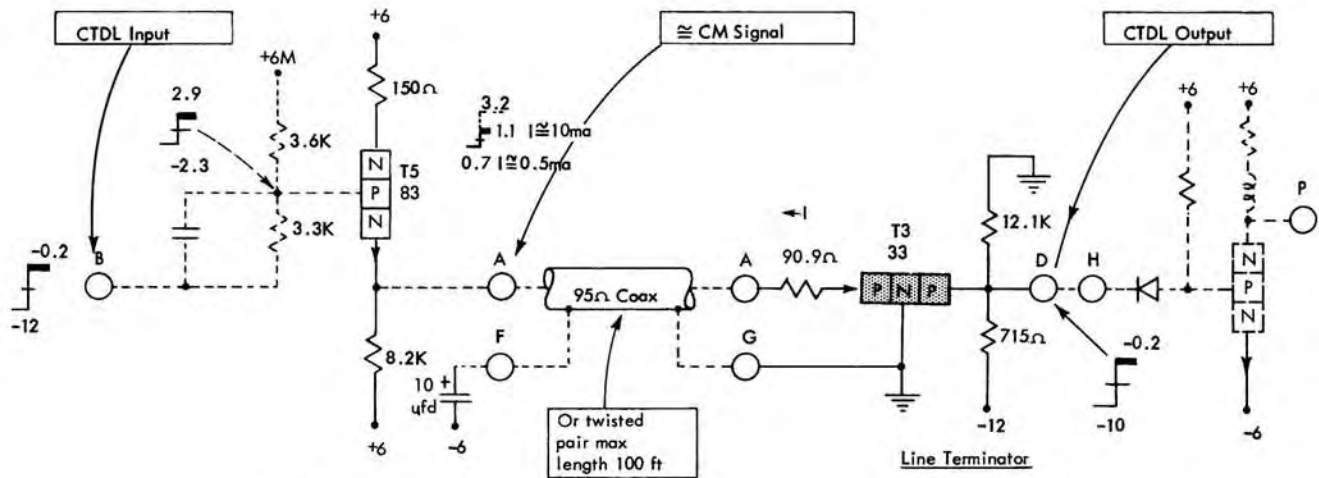


DT on current provided by DL (I_{on} ≈ 10 ma.)
 DT off current provided by 8.2K emitter Resistor as DL is fully biased off (I_{off} ≈ 0.5 ma.)



CU-- 371518

3 Circuits Per Card

CTDL Input		CTDL Output		Delays: usec				
Pin B (DL)		Pin D (DT)		Turn On	Per	Driver-Cable-Termin'r	100 ufd	Cable
Min.	Max.	Min.	Max.					
-0.5	0.24	-5.3	0.24				0.01	.003/ft
-7.4	-12.48	-7.4	-12					
				Turn Off			0.02	.003/ft
				Max.	0.15			

CTDL N-Type Line Terminator

The CU-- card consists of three PNP transmission line terminator circuits that translate a current mode N input to a CTDL U in-phase output. Each circuit terminates coaxial or twisted pair cables in their characteristic impedance and provides minimum loading on the NPN driving circuit. The 90.9 ohm resistor in series with the emitter to base impedance of the grounded base stage is selected for optimum match to the twisted pair and coaxial cables.

For proper decoupling action, the neutral wire of the twisted pair or the shield of the coaxial cable is AC coupled to -6v at the line driver and returned to the base reference voltage at the line terminator. The decoupling capacitor is physically located on the line driver card. No phase inversion occurs between the U input at the line driver and the U output from the line terminator.

Circuit Description

To aid in understanding the operation of the PNP line terminator, both the transmission line driver and terminator circuits are discussed at this time.

Assume a starting condition of T5 off and the grounded base terminator conducting at least 0.5ma. The emitter voltage of T5 is +0.7v. When a -U line is applied to pin B of the line driver, the base level of T5 is set to -2.3v

by the input divider. T5 is reverse-biased off and the output at pin A stays at +0.7v. Minimum current flowing in T3 and the coupling network results in an output at pin D near -10.0v.

A +U input at pin B of the line driver causes the base level of T5 to increase to +2.9v. T5 is forward-biased on and increases the current flow through the grounded base terminator circuit to 10ma. The line driver output at pin A is clamped at 1.1v by the line terminator. Increased current flow from the coupling network through T3, the cable, and T5 causes the output of the line terminator to increase to -0.2v.

The delays given are for the complete driver, cable and terminator configuration. Capacity loading and cable length increase the delay values. Typical loading is illustrated for the line terminator.

Application

This configuration (transmission line driver and line terminator) is used whenever a CTDL U line is to be driven between two widely separated points. By limiting the voltage swings driving into the cable, the effects of the cable delays and the DC crosstalk between cables are minimized. A NPN line driver circuit (CT-- card) is used to drive this line terminator.