SECTION 19

QUARTZ DELAY NETWORK NE4M/501

Introduction

This sub-unit accepts a 30-MHz signal, which may be amplitude-modulated with television video information, and imposes on it a delay which may be specified within the range 35 μs to 150 μs.

The sub-unit is constructed on a chassis type CH1/12B (indexing-stud-position Nos. 15 and 22) and comprises a Mullard 30-MHz Ultrasonic Delay Line Type YL2104/07 and a pair of amplifiers Types AM2/501A and 501B. The amplifiers are self-contained component assemblies, described in Instruction V.7; the amplifier Type AM2/501A drives the delay line, and the amplifier Type AM2/501B amplifies the output signal from the delay line to produce an overall gain of 0 dB.

General Specification

Delay	As specified within the range 35 μs to 150 μs ± 0·1% or 0·1 μs (whichever is greater at a specified temperature)
Gain	0 dB ± 0·5 dB
Bandwidth	Varies with specified delay line
Linearity	Input/output chacteristic is linear if input-signal does not exceed 100 mV r.m.s.
Signal/Noise Ratio	Varies with signal amplitude*
Transducer Capacitances	
Input	110 pF ±10 pF
Output	to be tuned
Gain Variation with Temperature	Less than 0·02 dB/°C
Weight	Approximately 5 lb.
Power Requirement	+18 volts, 210 mA

*By increasing the signal amplitude, a better signal/noise ratio can be obtained at the expense of a smaller overload margin. In a typical application, using an external 5-MHz low-pass filter, a ratio of greater than 50 dB is obtained (r.m.s. noise to p-p signal amplitude, unweighted).

Circuit Connections

The only wiring outside the amplifiers is their input, output and power connections to the delay line and to the 15-pin connector of the chassis. The connections to the latter are as follows:

Pin 4	Power supply (common)
Pin 5	Power supply (+18 V)
Pin 9	Input
Pins 8 and 10	Input-lead screen
Pin 13	Output
Pins 12 and 14	Output-lead screen

Other pins not connected

Maintenance

Adjustments are not necessary after the initial setting-up of the sub-unit.

The noise performance is dependent mainly on the loss in the delay line and on TR1 in the amplifier Type AM2/501B; if noise becomes excessive, this transistor should be renewed. This does not necessitate any re-alignment of tuned circuits of the amplifier.

References

Designs Department Technical Memorandum No. 7.110(65).

Designs Department Specification No. 7.66(65).

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