

EQUALISER EQ5/510 SERIES

Introduction

The EQ5/510 is a fixed video equaliser which provides both phase and attenuation correction; the attenuation correction is for a loss which is approximately proportional to the square root of the frequency. The equaliser can be made to have a basic (low-frequency) loss of 1 dB, 2 dB, 3 dB, 4 dB, 5 dB, 8 dB, 11 dB, 14 dB, 17 dB or 20 dB. It is used mainly with cables but can also be used with networks if their loss characteristics are suitable. The input and output impedances of the unit are both 75 ohms.

The circuit of the EQ5/510 was developed from that of the fixed equaliser EQ5/503. The chassis, which contains two separate equalisers, is $2\frac{1}{8}$ in. wide, 5 in. high and 10 in. deep. It is designed for mounting in a panel PN3/21 or PN3/23.

The circuit configuration which has been adopted ensures that small size coils and capacitors can be used. All the inductors are wound on 6-mm Neosid formers and all the capacitors can be T.C.C. Type SM3N or smaller. The resistors are normally the high-stability carbon type. When high values of basic loss involve small values of resistance which are outside the range of this type, then wire-wound resistors are used.

The input and output connections are made through cable adaptors (BBC Type 422), or through Musa coaxial plugs (P.O. No. 1).

The EQ5/510A, which was developed for use with the Vertical Aperture Corrector EP1/504, has the same circuit and uses the same printed-wiring board as the EQ5/510. It is mounted in a standard CH1/12A chassis instead of the non-standard chassis of the EQ5/510 and each chassis contains only one equaliser. Index pegs are provided on the CH1/12A in positions 17 and 30.

Circuit Description

The circuit diagram of the fixed equalisers EQ5/510 and EQ5/510A is shown in Fig. 1. Each unit consists of a phase correction network, an attenuation correction network and a π -type attenuator.

The attenuator is formed by R6, R7 and R8 at the input of the unit. It is included in the circuit so that the loss of the cable plus equaliser can be made a standard value when required. For example, the loss can be made to match the gain of a standard compensating amplifier. When the attenuator is not used, R7 and R8 are removed from the circuit and R6 is replaced by a wire link.

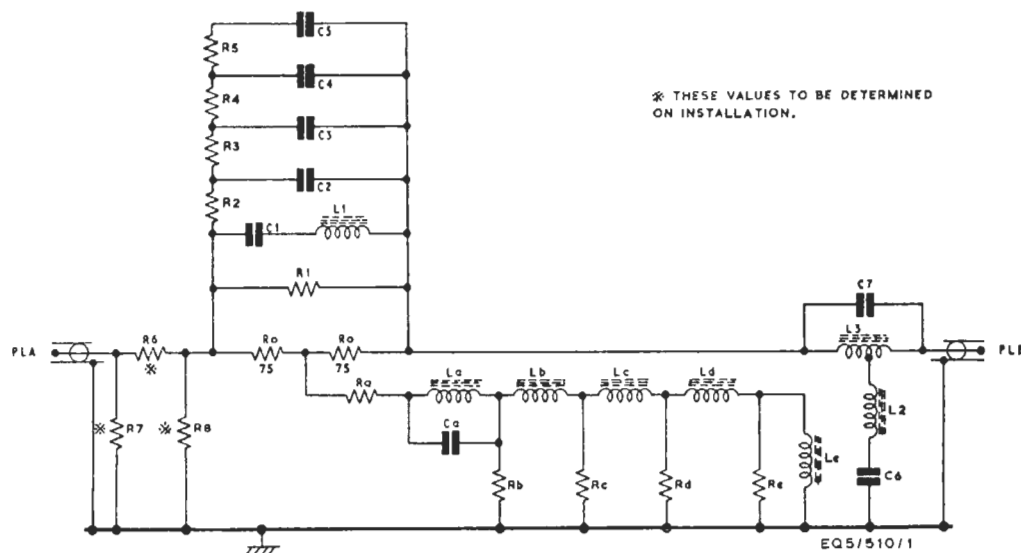


Fig. 1 Equalisers EQ5/510 and EQ5/510A: Circuit Drawing No. DA 10632, Issue 2

The phase-correction network is at the output of the equaliser and consists of C6, C7, L2 and L3. It is of the constant-resistance bridged-T type which is discussed in *Television Engineering*, Volume 2, Chapter 9.

The attenuation-correction network is the part of the circuit contained between the attenuator and the phase-correction network. It is the same as the correction network in the equaliser EQ5/503.

Component values for attenuation correction are derived from the settings of a variable equaliser. Originally this variable equaliser was the EQ5/501 and the selection of component values is outlined in the description of the EQ5/501. The original

procedure is still used but now the EQ5/501 is usually replaced by a variable equaliser-amplifier EQ1/505, which provides both variable-attenuation correction and variable-phase correction. Component values for phase correction in the fixed equaliser are obtained directly from the settings of the variable-phase equaliser in the EQ1/505.

EQ5/510B, C, D

The B, C and D versions of the Equaliser are all similar to the EQ5/510 but they are equipped to equalise 150 ft, 600 ft and 400 ft of PSF1/2 cable respectively. Component values for these equalisers are given in the following Table with reference to Fig. 1.

UNIT	R1	R2	R3	R4	R5	R6	R7	R8	Ra	Rb	Rc	Rd	Re	Ro	C1
EQ5/510	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EQ5/510A	*	*	*	*	*	*	*	*	*	*	*	*	*	75	*
EQ5/510B	20	27	56	150	-	s/c	-	-	270	200	100	39	-	75	390
EQ5/510C	43	62	300	-	-	s/c	-	-	130	91	20	-	-	75	1300
EQ5/510D	43	62	300	-	-	s/c	-	-	130	91	20	-	-	75	740

UNIT	C2	C3	C4	C5	C6	C7	Ca	L1	L2	L3	La	Lb	Lc	Ld	Le
EQ5/510	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EQ5/510A	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
EQ5/510B	1500	1800	1800	-	-	-	-	-	-	-	L/169	L/170	L/170	L/170	S/C
EQ5/510C	1500	1600	-	-	-	-	51	L/415	-	-	L/170	L/170	L/170	-	S/C
EQ5/510D	620	680	-	-	-	-	36	DA 10646 DET 1	-	-	DA 10646 DET 5	DA 10646 DET 7	L/70	-	S/C

* select on test. - item omitted. S/C short circuit.

J.W. 4/66