DISCRIMINATOR UN15/503

Introduction

The UN15/503 consists of two frequency-divider chains and a phase discriminator. The two dividers produce output signals at nominally 5·208 kHz one from an input at 6 MHz and the other from a second input at line frequency, usually mixed syncs. The two outputs are compared in the phase discriminator and a d.c. signal is produced proportional to any phase difference between them.

The UN15/503 combines the circuit functions of the CO2/510 Frequency Converter and of the UN15/501 Discriminator and the circuit arrangements used are similar.

The unit was designed as part of the MD1M/507 Wide Band Sound and Vision Modulator and consists of six printed boards housed in a CH1/46A chassis with index pegs 31 and 38.

The sub-units are UN15/504, AM1/576 and UN1/605A to C.

Circuit Description

A circuit diagram is given in Fig.1. The 6-MHz input signal (the compared signal) is amplified and limited by TR1 and TR2. The output from TR2 drives IC1 which is the first section of a seven-section divider having an overall ratio of 1152. Integral circuits IC3 and IC4 have negative feedback via C7 and C8 and the output from IC4 is at 41·66 kHz. Integrated circuit IC4 feeds into the first of three parametric dividers UN1/605A, B and C. These dividers have a ratio of two and are used in preference to binary counters to avoid interference problems which might otherwise arise when the output frequency of the divider chain falls within the range of normal sound modulation frequencies.

The input to the second divider chain is normally mixed syncs (the standard signal). This is amplified and limited and then drives IC5 which produces a line driving pulse free from any field component; this pulse is used to trigger IC6 to divide by 3. Capacitor C16 is the feedback capacitor. The output from IC6 is at 5·208 kHz.

The outputs from the two divider chains, both nominally at 5·208 kHz, are fed to the discriminator, the d.c. output from which is proportional to any phase difference between the input signals.

Maintenance

Routine maintenance is not required and there are no operational controls.

Reference

1. Designs Department Specification No.4.56(69)
AIB 3/71

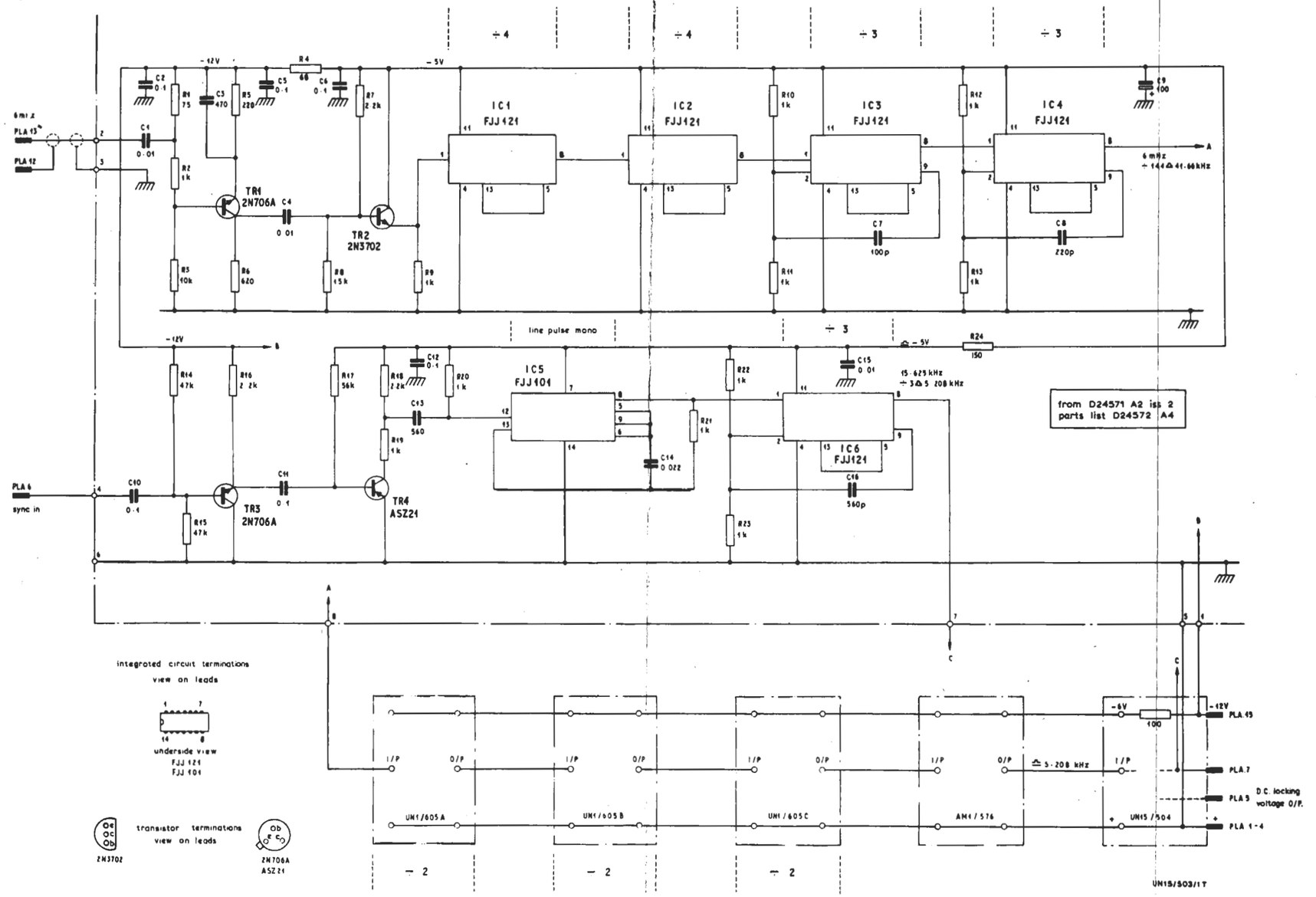

Fig.1. Circuit of the Discriminator UN15/503