

SOUND-IN-SYNCS AUDIO INPUT AND FILTER UNIT FL1/36

Introduction

The FL1/36 forms part of a sound-in-syncs coder¹ and comprises:

- (a) a repeating coil, followed by a 6-dB pad, which accepts a balanced audio input and provides an unbalanced output at approximately 7 dB below the level of the input signal.
- (b) a 16-kHz low-pass filter, followed by a 6-dB amplifier, which accepts an unbalanced audio plus pilot-tone signal and feeds the sample-and-hold² section of an analogue-to-digital converter.

The unit is constructed on a CH1/12A chassis with index-pin positions 29 and 42. Power supplies at +24V are required.

General Specification

Inputs

- Repeating Coil audio, impedance 600 ohms (balanced)
- Filter audio plus pilot tone at a level not exceeding 0 dB w.r.t. 1 mW, impedance 600 ohms (unbalanced)

Outputs

- Repeating Coil audio at approximately -7 dB w.r.t. input level, impedance 600 ohms (unbalanced)
- Filter audio plus pilot tone at approximately +6 dB w.r.t. input level when feeding a 600-ohm load

Power Requirements

10 mA at +24 V

Circuit Description

A circuit diagram of the FL1/36 is given in Fig. 1.

Repeating Coil

The repeating coil accepts a balanced input signal at a nominal impedance of 600 ohms. The inclusion of R13 across the secondary winding produces a more accurate impedance match by reducing the secondary load impedance to compensate for the winding resistance of the coil. The network R10, R11 and R12 forms a 6-dB pad and provides an unbalanced output which is approximately 7 dB below the level of the input signal. This output is fed to an associated FL1/32 Band-stop and Pre-emphasis Filter.

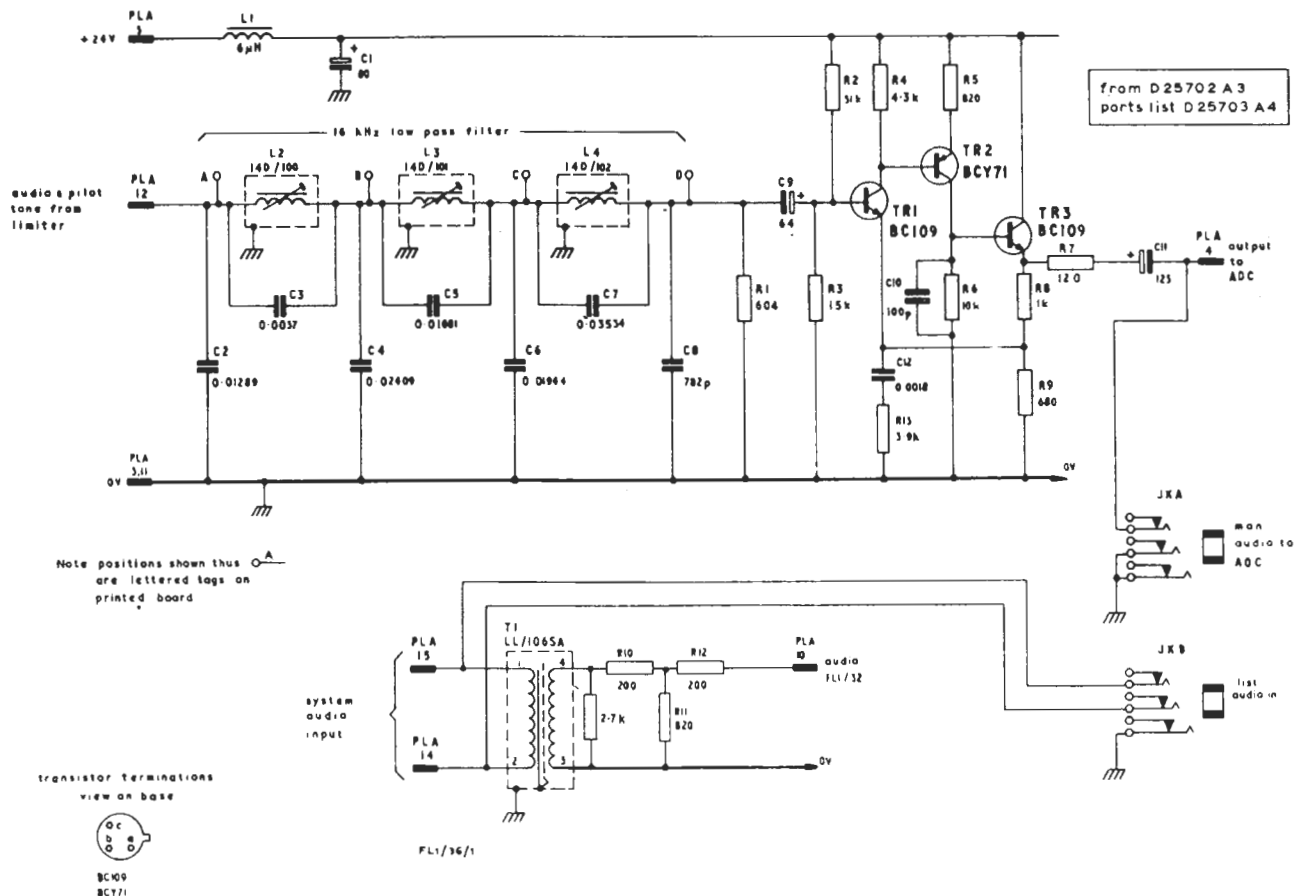


Fig. 1 Circuit of the FL1/36

An audio-listen output is provided as a means of checking that the coder is receiving an audio signal.

Low-pass Filter and Amplifier

The filter accepts a band-limited audio plus pilot-tone signal from an associated FL1/32 Band-stop and Pre-emphasis Filter. When used in conjunction with the FL1/32, the filter provides more than 40-dB rejection to all audio frequencies above 14.8 kHz.

converter. A monitor output is provided also.

Maintenance

The frequency response of the filter and amplifier can be checked against the response characteristics shown in Fig. 2.

In the event of filter faults, the resonance frequencies of individual sections can be checked by applying the output of an oscillator to the input of the suspect section and monitoring the output of the

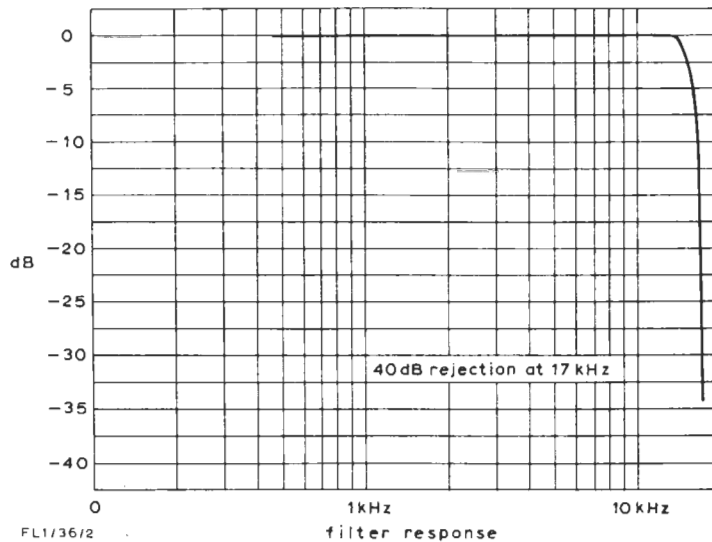


Fig. 2 Frequency Response of the FL1/36

The amplifier is a conventional three-stage type with a.c. and d.c. feedback. Capacitor C10 limits the gain of the amplifier at very high frequencies, and the combination of C12 and R13 progressively increases the gain above 13 kHz and so compensates for losses introduced by the filter. The amplifier output feeds the sample-and-hold section of an analogue-to-digital

section with a detector. The injection and monitoring points, together with the frequencies used and the readings obtained, are given in Table 1.

References to Typical Associated Equipment

1. Sound-in-syncs Coder CD2M/505
2. Sound-in-syncs Sample and Hold Logic Unit UN23/530

TABLE 1

Inject at Tag	Frequency	Tune for Min. Response	Detect at Tag	Approximate Reading
A	30.02 kHz	L1	B	-60 dB
B	19.31 kHz	L2	C	-50 dB
C	17.16 kHz	L3	D	-80 dB