STANDARDS DETECTOR IN6/502

Introduction

The IN6/502 accepts a video signal; its output is a display of six lamps which indicate:

(a) low level or no input signal,
(b) 405-line standard input signal,
(c) 525-line standard input signal,
(d) 625-line standard input signal,
(e) 819-line standard input signal,
(f) a 525-line or 625-line input signal with colour burst.

Additional relay contacts provide for an external indication.

The IN6/502 is constructed on a CH1/12B chassis and three plug-in printed wiring cards. The index-peg positions used are 11 and 19.

General Description

A block diagram of the IN6/502 is given in Fig. 1. The input signal is separated into luminance and chrominance components by means of filters. Sync pulses, obtained from the luminance component, are fed to four detectors and a burst-gate pulse generator. Three of the detectors are tuned to the three line-frequencies used in the four main television standards. A relay contact in the 60-Hz detector switches the output of the 15-kHz detector between the *525* and the *625* indicator lamps.

The *Colour* indicator lamp is fed from the output of a broadly-tuned detector fed with a gated colour-burst signal on 525-line and 625-line signals only.

Circuit Description

The circuit of the IN6/502 is given in Fig. 3 on page 3. The power supplier circuit is unusual in that the series regulating stage is a complementary Darlington pair TR2 and TR3 used in the common-emitter mode. The principle of this circuit is illustrated in Fig. 2. Transistor TR1 is biased by the reference zener diode D5. A tendency for the output voltage across R_L to change is opposed by a change in the bias to the emitter of transistor TR1 causing a change in the base current to transistor TR2,3 and thus a change in the current through R_L.

In the IN6/502 transistor TR1 forms part of a long-tail pair amplifier. Zener diode D7 is used to avoid attenuation of the changes in the regulated supply voltage. Current through resistor R1 starts the circuit operating when it is switched on and diode D6 protects the base-emitter junction of transistor TR2 against high inverse voltages.

Inverted sync pulses from the collector of transistor TR9 are fed to three similar line-frequency detectors. The sync pulses are fed via a series tuned

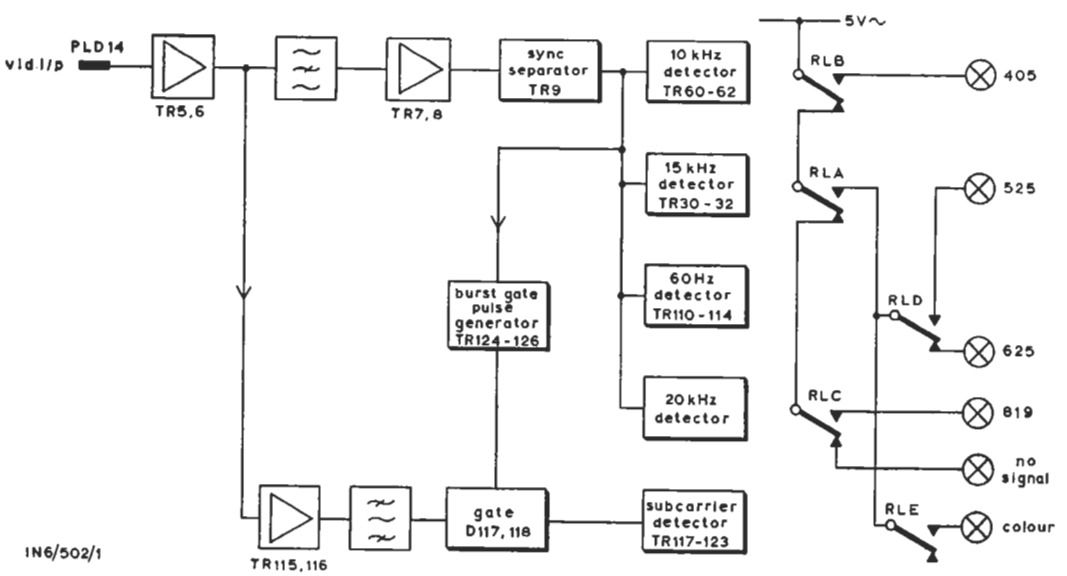

Fig. 1 Block Diagram of the IN6/502

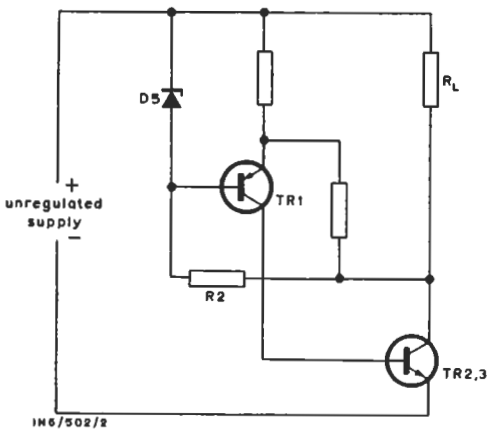

Fig. 2 Diagram Illustrating the Principle of the Series Regulating Stage

circuit to a common-emitter stage. The resulting sine-wave is d.c. restored and detected to operate a relay. A zener diode is used to bias the relay drive transistor to prevent the relay operating on low-level or wrong line-standard input signals.

Inverted sync pulses are also fed to the 60-Hz detector. These sync pulses are integrated, by resistor R110 and by capacitor C110, to produce a positive-going pulse at the start of each field. These pulses trigger an emitter-coupled monostable multivibrator which includes transistors TR110, TR111 and TR112. Variable resistor RV1 is set to give the negative-going output pulses a duration of just over 16 ms. This causes the multivibrator to be triggered on alternate fields for a 525-line input signal giving the waveforms shown in Fig. 4. These waveforms are d.c. restored by diode D112 and detected. Zener diode D115 biases transistor TR114 to prevent relay RLD operating on a 625-line input signal.

Inverted sync pulses are also fed to the burst-gate pulse generator. The pulses are inverted by transistor TR124 and the positive-going trailing-edges of the sync pulses trigger an emitter-coupled monostable multivibrator which produces positive-going burst-gate pulses.

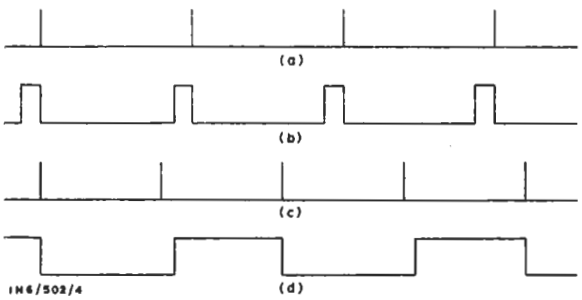

Fig. 4 Waveforms In the 60-H Detector
(a) junction of C110 and R110, 50-Hz input
(b) collectors of TR111 and TR112, 50-Hz input
(c) junction of C110 and R110, 60-Hz input
(d) collectors of TR111 and TR112, 60-Hz input

The centre portion of the chrominance band-pass filter between transistors TR116 and TR117 is made balanced by the use of autotransformers L4 and T2. Burst-gate pulses are applied to this balanced section. Amplified colour bursts rectified by a bridge voltage doubler circuit are applied via a complementary Darlington emitter follower to a Schmitt trigger circuit which controls the relay driver transistor TR123.

Test Procedure

The IN6/502 can be tested by applying video signals of different line standards and observing the behaviour of the indicator lamps.

MJR 5/68

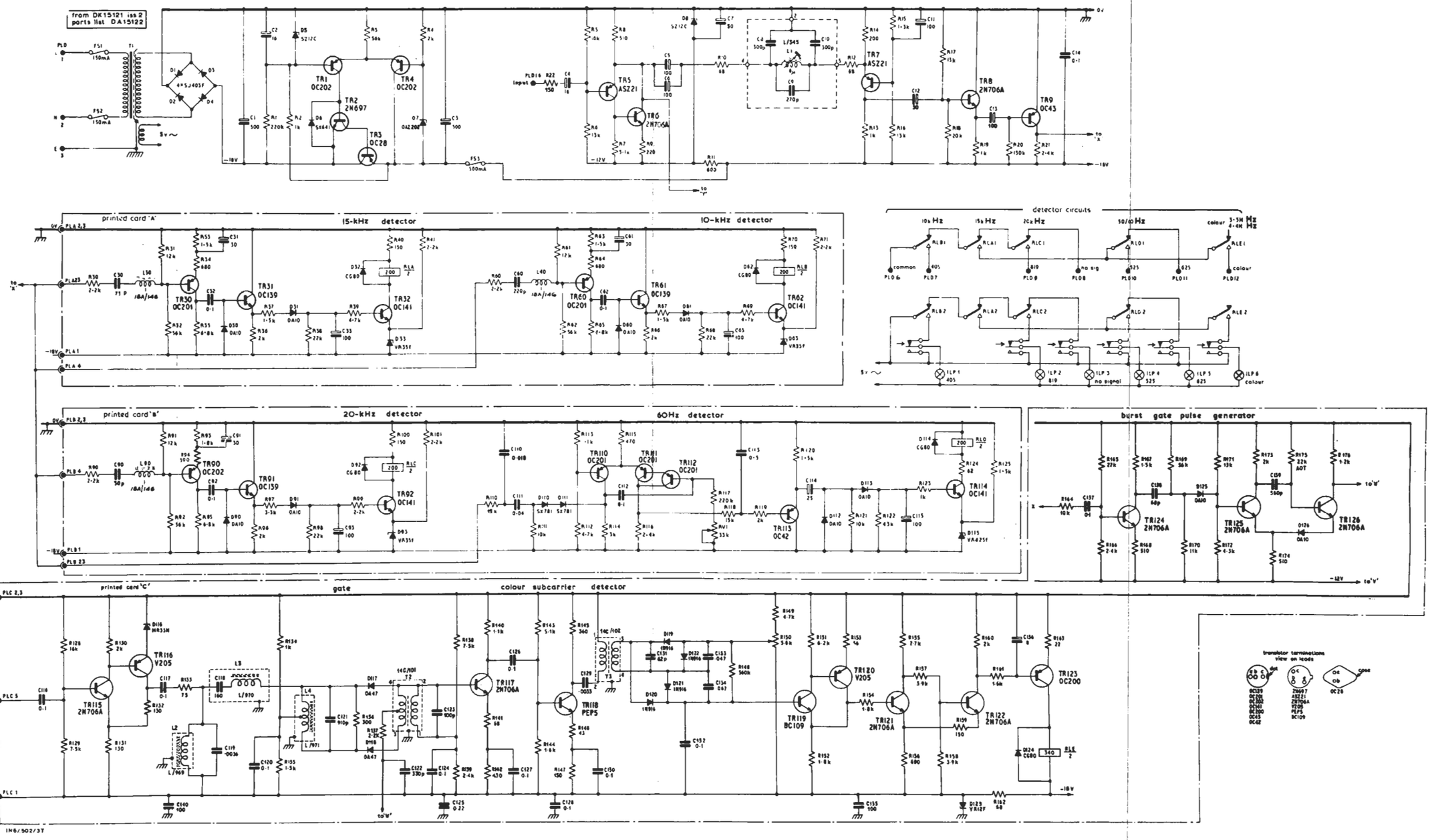

Fig. 3 Circuit of the IN6/502