

SECTION 62

SWITCHING LOGIC UNIT UN1/562

Introduction

The UN1/562 forms part of a control servo in a Vertical Aperture Corrector EP1/504 (see Instruction V.15). Its inputs are:

- Field Blanking Pulses.
- Error Pulses (field-frequency positive-going pulses on possibly one of two inputs, but not on both at the same time.)
- End Stop Logic (two d.c. signals which can both be 0 volts or one 0 volts and the other -5 volts).

The outputs of the UN1/562 are:

- Sync Gating Pulse (a 4-ms positive-going pulse in the middle of each field).
- Video Gating Pulse (a d.c. signal which is 0 volts unless one of the End Stop Logic inputs is negative and there is an Error Pulse).
- Counter Trigger Pulse (a pulse output derived from either of the Error Pulse inputs.

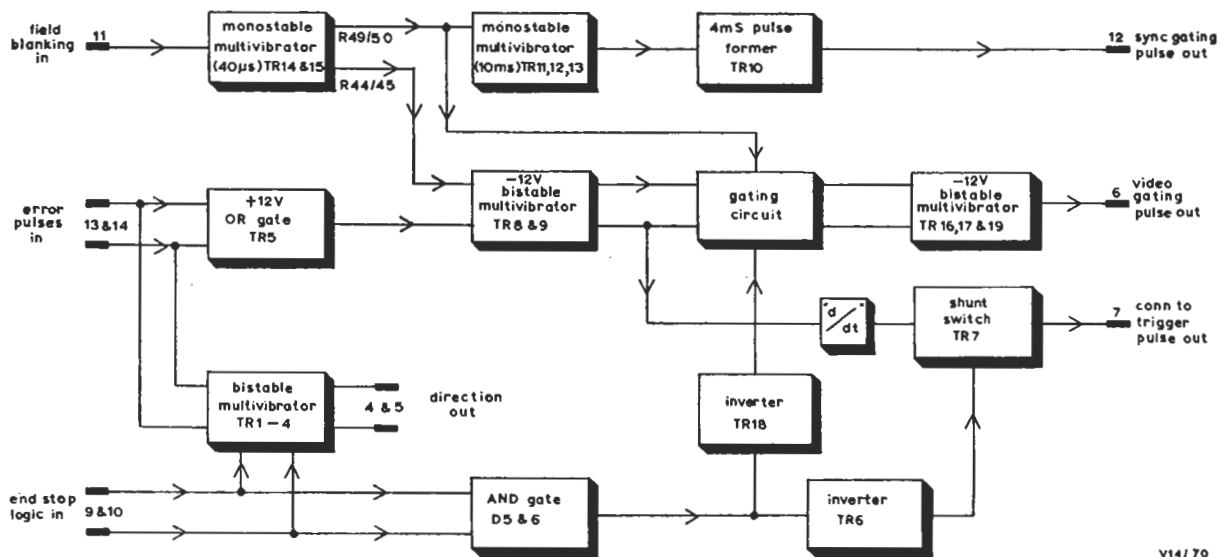
The d.c. signals can be switched on and off at half field-frequency.

The UN1/562 is constructed on a CH1/12A chassis with index peg positions 16 and 25.

Circuit Description

The circuit of the UN1/562 is given on page 62.3 and a block diagram is shown in Fig. 62.2. Field blanking pulses, fed via pin 11, trigger a 40- μ s monostable multivibrator which includes transistors TR14 and TR15. The positive-going output of this multivibrator is used to trigger a 10-ms monostable multivibrator which includes transistors TR11 to TR13. Transistors TR12 and TR13 are connected as a Darlington pair so as to have a high input impedance. This enables the value of resistor R39 to be kept high and the value of capacitor C11 to be kept relatively low. The trailing edge of the 10-ms pulse is differentiated (capacitor C9 and resistor R34) and amplified (transistor TR10) to give a 4-ms *Sync Gating Pulse* in the middle of each field.

Positive-going error pulses at not more than field frequency are fed to an OR gate (transistor TR5) whose output sets a bistable multivibrator during the middle of the field. This bistable circuit, which includes transistors TR8 and TR9, is reset by the trailing edge of the succeeding 40- μ s field pulse fed from the junction of resistors R44 and



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Fig. 62.2 Block Diagram of the UN1/562

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R45. The output of the bistable circuit is differentiated to give a counter-trigger pulse provided that the shunt switching transistor TR7 is kept cut off.

The error pulses are also fed to a bistable multivibrator which includes transistors TR1 to TR4. The output state of this bistable circuit depends upon which of its two inputs was triggered last. The outputs of this bistable are used to control the direction of a reversible counter circuit in a UN1/561. The bistable also has two d.c. inputs (*End Stop Logic*) which latch the bistable output state.

The end-stop logic inputs are fed also via a diode AND gate to two inverting transistors TR6 and TR18. Transistor TR6 feeds the shunt switching transistor TR7 so that a counter trigger pulse output is not produced if one of the end-stop logic inputs is negative.

The video gating pulse output is fed from a bistable circuit which includes transistors TR16 to TR19. This circuit is set (to give a positive output) by the 40- μ s field pulse provided that the previous bistable circuit (transistors TR8 and TR9) is reset. This bistable circuit is reset by the 40- μ s pulse provided that the previous bistable circuit is set (by an Error Pulse) and that one of the end-stop logic inputs is negative.

Test Schedule

Apparatus Required

Oscilloscope.

Two 12-volt power suppliers.

Feed of 50-Hz field trigger pulses.

Test Procedure

1. Connect two 10-kilohm resistors between pins 3 and 9 and between pins 3 and 10.
Connect the power suppliers as shown in Fig. 62.1 and switch on.
Connect the feed of trigger pulses to pin 11.
2. Connect the oscilloscope to pin 12 and observe the waveform. It should be a 12-volt positive-

going 4-ms pulse with the leading edge delayed about 11 ms from the leading edge of the field trigger pulse.

Switch off.

3. Connect a 820-ohm resistor between pins 8 and 12.

Using a short lead with crocodile clips connect pins 12 and 13.

Switch on and check that:

- (a) the star indicator operates.
- (b) pin 6 is at -11 volts.
- (c) pulses are not present at pin 7.
- (d) pin 4 is at -5 volts.
- (e) pin 5 is at 0 volts.

4. Disconnect the clip from pin 13, reconnect it to pin 14 and check that:

- (a) the star indicator operates.
- (b) pin 6 is at -11 volts.
- (c) pulses are not present at pin 7.
- (d) pin 4 is at 0 volts.
- (e) pin 5 is at -5 volts.

Switch off.

5. Connect pin 8 to pin 9.

Remove the clip from pin 14 and switch on. The indicator should remain off.

Connect the clip to pin 13. The indicator should operate.

Transfer the clip to pin 14. The indicator should go off and 3-volt positive-going pulses should appear at pin 7.

Switch off.

6. Remove the earth from pin 9 and transfer it to pin 10.

Disconnect the clip from pin 14 and switch on. The indicator should remain off.

Connect the clip to pin 14. The indicator should operate.

Transfer the clip to pin 13.

The indicator should go off and 3-volt positive-going pulses should appear at pin 7.

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