SECTION 8

TELEVISION AUTOMATIC MONITOR MINOR MN2M/508 AND MN2M/508A

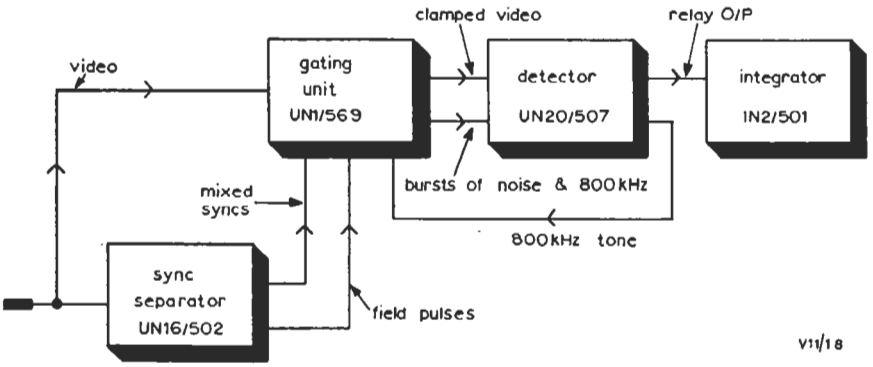

Fig. 8.1 Block Diagram of the MN2M/508

Introduction

A general introduction to automatic monitoring is provided in BBC Engineering Monograph No. 62, April 1966.

The MN2M/508 monitors automatically a 625-line standard composite video signal by assessing the noise level during the sync pulses and by gauging the overall maximum amplitude of the signal. An alarm indication is provided if these two parameters are out of tolerance. The MN2M/508A is a 405-line standard version.

The MN2M/508 comprises the following units mounted from left to right in a panel PN3/23:

Unit	*Instruction*
blank panel	—
blank panel	—
Integrator Unit IN2/501	V.9
Detector UN20/507	V.14
Gating Unit UN1/569*	V.14
Sync Separator UN16/502*	V.14
Power Supplier PS2/9	G.2

*A suffix A in the code of these units indicates a 405-line standard version used in the MN2M/508A.

General Specification

Input Level	1 volt p-p (composite video)
Input Impedance	75 ohms ± 1 per cent
Alarm Sensitivities	
An alarm is given if one of the following parameters falls outside the given limits for about twenty seconds:	
(a) signal amplitude	+2 dB or −4 dB relative to 1 volt p-p
(b) noise level	greater than −30 dB relative to 1 volt p-p
Output	changeover relay contact

General Description

A block diagram of the MN2M/508 is shown in Fig. 8.1. The input video signal is fed to the Sync Separator and to the Gating Unit. The Sync Separator produces a mixed-sync waveform and also pulse trains which correspond to the broad pulses. These waveforms are fed to the Gating Unit.

The Gating Unit produces two outputs; a clamped video signal and a waveform comprising bursts of noise mixed with an 800-kHz tone. The tone originates from an oscillator in the Detector. The two outputs are fed to the Detector where they are peak rectified and compared with reference voltages. If the comparisons are within given limits then relays are operated. The relay contacts of

these two comparison circuits are connected in series; thus a fault of either amplitude or noise breaks the Detector output circuit. A few seconds after the Detector relay releases, a relay in the Integrator Unit operates. This relay can be used to operate an external alarm.

An alarm indication caused by the noise-comparison circuit can arise in one of two ways; by too high a level of noise or by too low a level of 800-kHz tone. An alarm caused by too low a level of tone indicates a fault within the MN2M/508.

Test Schedule

Apparatus Required

Avometer model 8
Tektronix oscilloscope type 524AD
Sawtooth and Lift Test Generator
Video amplifier, 6 dB
Variable attenuator
Extender board CH1A/1

Test Procedure

1. *Sync and Field Pulses*
   Switch on and wait for at least five minutes.
   Feed a composite video signal, of the appropriate line-standard, via the attenuator and the 6-dB amplifier to the input of the Monitor terminated in 75 ohms.
   Set the input level to the monitor at 1 volt p-p.
   Connect the oscilloscope to pin 4 of the UN16/502 and check that 4-volt positive-going pulses are present. Check that these pulses have flat tops.
   Connect the oscilloscope to pin 10 and check that 1·2-volt p-p inverted sync pulses are present.
2. *Adjustment of Gating Unit*
   Replug the Gating Unit using the extender board.
   Use the oscilloscope to check the presence of the waveforms shown in Fig. 8.2.
   Use the Avometer (d.c. range, 0—10 volts) to measure the voltage at the emitter of transistor TR1; it should be 5·5 ± 0·25 volts.
   Connect the oscilloscope to the collector of transistor TR4 and set potential divider R79 to give a displayed sync-pulse amplitude of 0·15 volts.
   Connect the oscilloscope to the *Monitor Gate Output* socket and adjust potential divider R80 to give an output burst with a minimum amount of pulse component in the waveform.
   Replace the Gating Unit in the Monitor.

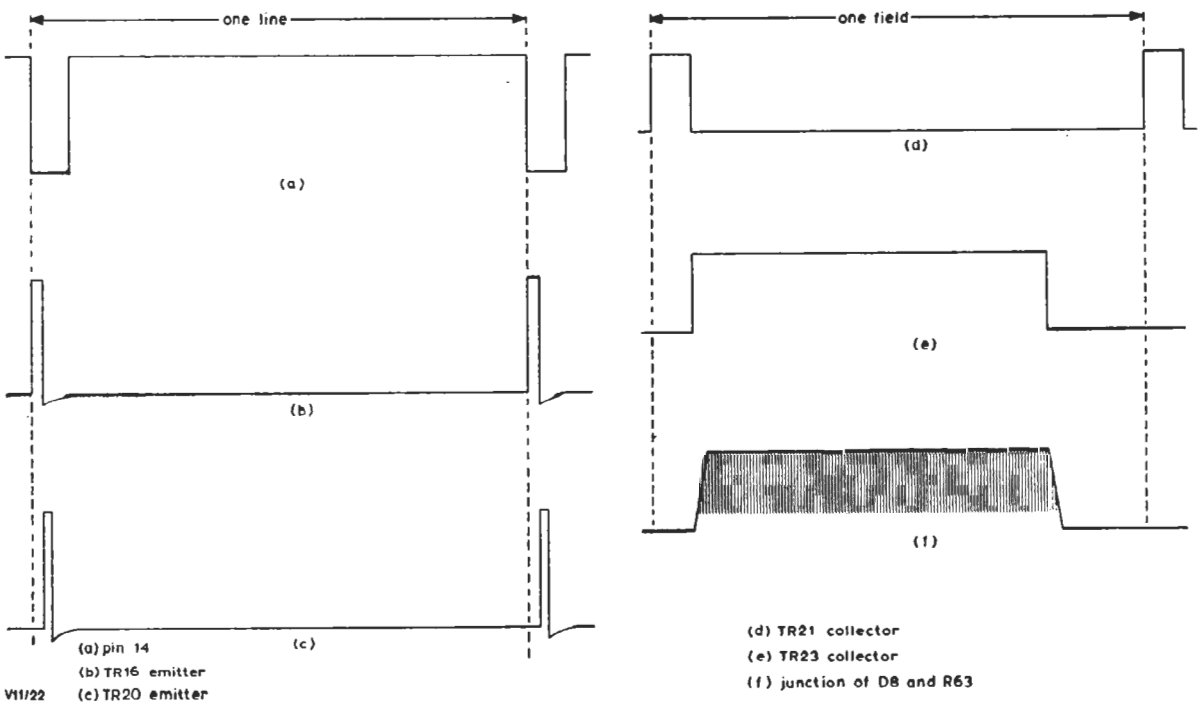

Fig. 8.2 Waveforms in the MN2M/508 Gating Unit

3. *Adjustment of Detector*
   Replug the Detector using the extender board and wait for about five minutes.
   Set the level of the input video signal at −1 dB relative to 1 volt p-p.
   Measure the voltage at monitoring point MP4 using the Avometer and turn potential divider R66 over its full range. Note the voltage at which relay RLB releases; it should be at 16·5 ± 1·0 volts.
   Adjust R66 to make the voltage at monitoring point MP4 a minimum. This should be 3·0 ± 0·5 volts less than the release voltage for relay RLB.
   Check the levels of the input video signal at which relay RLB releases; they should be +2 dB and −4 dB relative to 1 volt p-p.
4. *Adjustment of 800-kHz Tone*
   Connect the oscilloscope to pin 6 of the Detector and set the frequency of the 800-kHz tone by adjusting inductor L1.
   Connect the oscilloscope to monitoring point MP1 and set the level of the tone at 1·5 volts p-p by adjusting the potential divider R67.
   Measure the voltage at monitoring point MP2 using the Avometer and turn potential divider R65 over its full range. Note the voltage at which relay RLA releases.
   Adjust R65 to make the voltage at monitoring point MP2 a minimum; this should be 3.0 ± 0·5 volts less than the release voltage of relay RLA. Earth pin 14; the voltage at monitoring point MP2 should rise to at least 17·5 volts and relay RLA should release. If the relay does not release adjust R67 to increase the level of tone at monitoring point MP1.
5. *IN2/501 Reaction Time*
   Remove the video input and check that the time taken for the IN2/501 to indicate an alarm is 15 to 25 seconds.

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