

TELEVISION AUTOMATIC MONITOR MN2M/513

General Description

The MN2M/513 accepts a 625-line composite television signal with an added Insertion Test Signal. The monitor produces up to 13 d.c. outputs each of which represents one of the parameters of the Insertion Test Signal. Each voltage can vary between zero and eight volts and is in direct proportion to the parameter measured; normally each d.c. output is five volts.

Usually the monitor is equipped to measure the following parameters:

- (a) Bar amplitude
- (b) 2T-pulse amplitude
- (c) 2T-pulse lobes
- (d) Tilt on peak-white bar
- (e) Sync pulse amplitude (except in the presence of a sound-in-syncs signal)
- (f) Amplitude of maximum staircase raiser
- (g) Amplitude of minimum staircase riser
- (h) Chrominance bar amplitude
- (i) Luminance/chrominance delay
- (j) Luminance/chrominance crosstalk
- (k) Differential phase and gain
- (l) Low-frequency errors
- (m) Unweighted noise and flashing.

The MN2M/513 comprises the following units which are mounted on a PN3/23 chassis:

GE2/585	Insertion Pulse Generator (incorporating UN16/518A Sync Pulse Separator)
PS2/67	Power Supplier
PS2/82A	Power Supplier
UN9/568	Insertion Test Signal Gating Unit
UN20/516	Pulse-and-bar Amplitude Detector Unit
UN20/518	Chrominance and Sync Pulse Amplitude Detector Unit
UN20/519	Noise and Flashing Detector Unit
UN20/520	Chrominance/Luminance Delay Detector Unit
UN20/521	Differential Gain Detector Unit
UN20/522	L.F. Error Detector Unit
UN20/529	Pulse-and-bar k-rating Detector Unit
UN20/530	Luminance/Chrominance Crosstalk Detector Unit.

Fig. 1 is a block diagram of the monitor and Fig. 2 shows the mains and d.c. connections.

The MN2M/513 can be used simply as a measuring instrument or, more usually, in conjunction with a Television Automatic Monitor MN2M/518. The combination is used at television transmitting stations. The MN2M/518 can cause transmitter drive and amplifier switching to take place if one or more of the parameters measured by the MN2M/513 falls outside a preset tolerance.

Test Schedule

The following test procedure is a comprehensive series of checks to ensure that the monitor is working correctly. It is not intended to be a full calibration procedure which is given in the Designs Department Technical Specifications listed later.

Apparatus Required

- Oscilloscope with a high input-impedance
- Low-capacity probe for use with the oscilloscope
- Source of composite 625-line video signal
- Source of standard Insertion Test Signal, preferably an Insertion Test Signal Generator GE4M/540

Test Procedure

1. Connect a standard one-volt video signal, complete with Insertion Test Signal, to the input of the MN2M/513.

UN9/568

2. Check that positive-going clamp pulses of 12-volts p-p amplitude and 2 ± 0.1 microseconds in duration are present at pin PLA4. Check that a negative-going line-19 gating pulse of five volts in amplitude and 10 ± 0.1 microseconds in duration is present at pin PLA16. Check that a similar line-20 gating pulse is present at pin PLA18.
3. Check that the output waveforms obtained from the test points on the front of the unit are, except for the sync pulse, 1.4 volts in amplitude. Check that the output sync-pulse amplitude is 0.9 volt p-p.
4. Check that the gain measured between PLA2 and PLA6 is 6 ± 0.1 dB.

Any undesired pedestal on the output waveforms can be removed by adjusting variable resistor R4 in the appropriate circuit. If the pedestal cannot be removed the usual fault is a failure of the clamp circuit.

- (a) Check that 12-volt clamp pulses are present both at pin PLA4 and at the emitter of transistor TR23.
- (b) Check that a six-volt clamp pulse is present at the gate of transistor TR24.
- (c) Check that a four-volt p-p video waveform, clamped to earth potential, is present at the junction of components C22 and R41.

Distortion of the waveform may be caused by f.e.t. switches failing to open or close.

GE2/585A

5. Ensure that the UN16/518 and the GE2/585 sections of the GE2/585A are set up correctly.

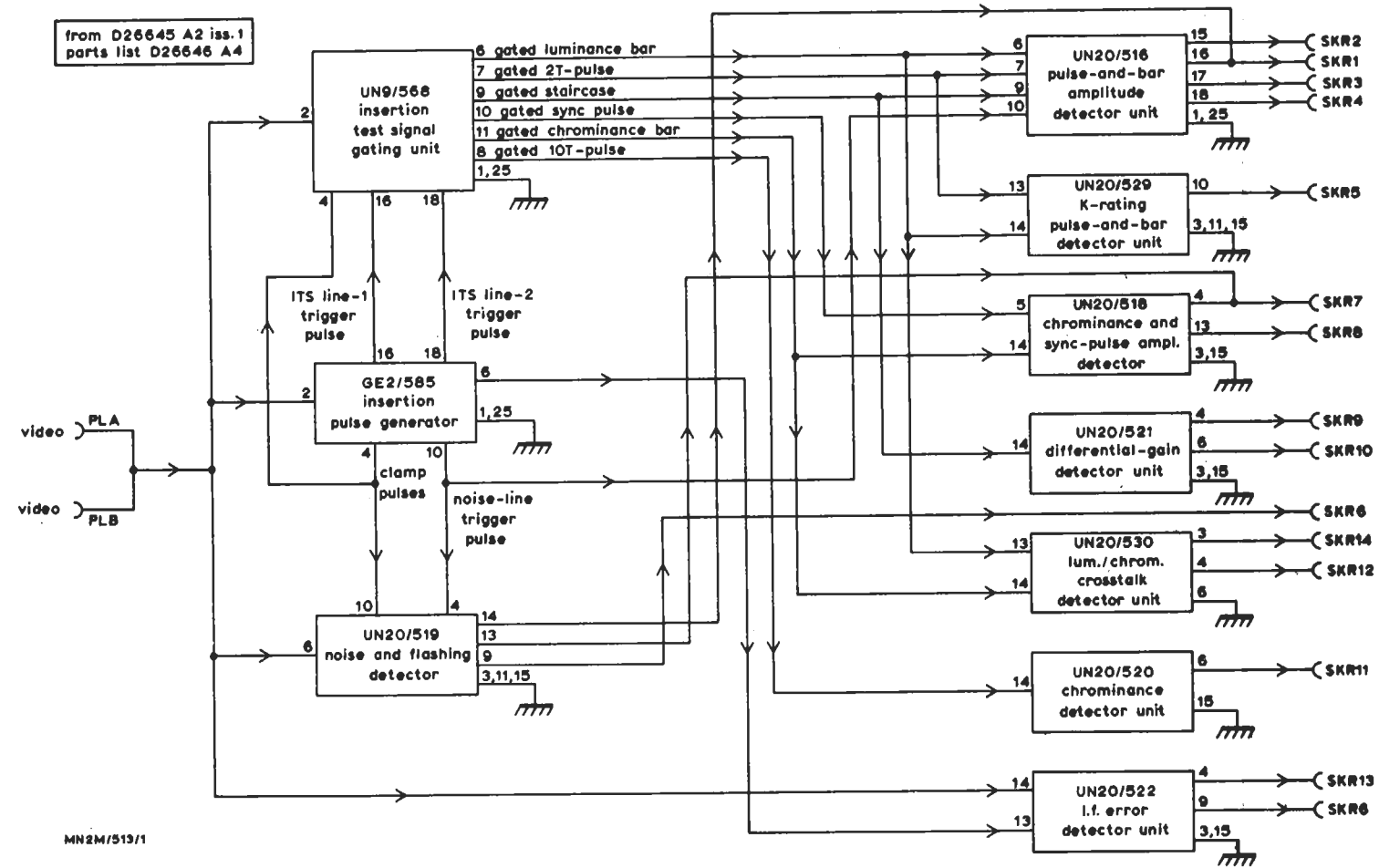


Fig. 1. Block Diagram of the MN2M/513

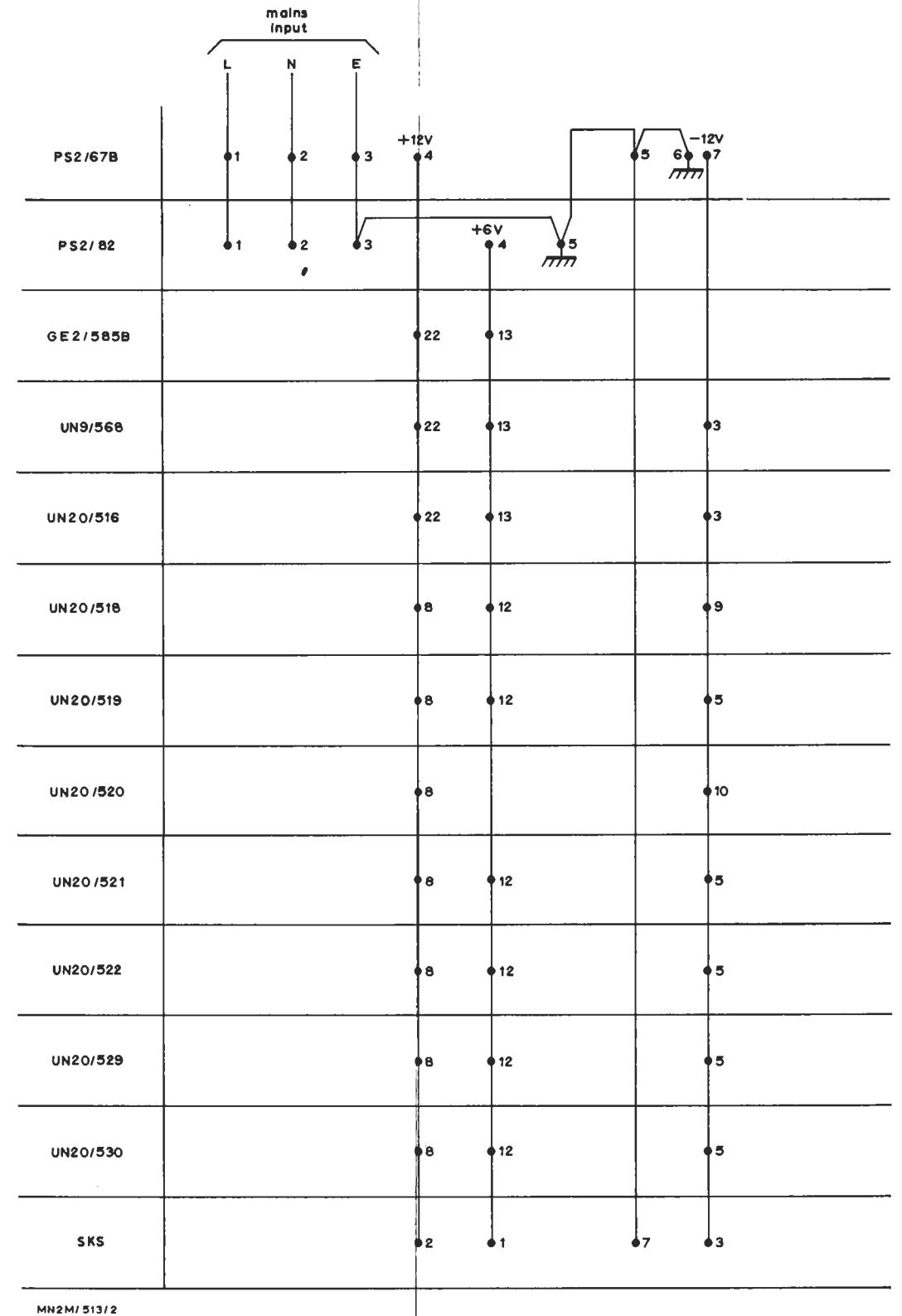


Fig. 2. Mains and D.C. Connections

6. Check that a video waveform of one volt p-p is present at pin PLA2.
7. Check that 12 ± 0.1 volt clamp pulses of 2 ± 1 microseconds duration are present at pin PLA4.
8. Check that the output waveforms present at the test points on the chassis of the unit are as follows:

Test Point	Waveform	Duration	Amplitude
Video	composite video		1V p-p
Sync	mixed syncs		4V p-p
Line 12 Line 16 Line 19 Line 20	negative-going pulses	10 $\pm 0.1 \mu s$	5V p-p

9. Check that the pulses present at test points TP1 to TP4 are 64 ± 2 microseconds wide.
10. Check that the trailing edge of the line-sync pulse at the beginning of each gated line is within two microseconds of the centre of the 64-microsecond pulse.
11. Check that the dummy-sync pulses on PLA8 are each 10 microseconds in duration.

UN20/516

12. Check that the waveforms at the following input points are as follows

Pin	Waveform	Amplitude
PLA6	10 μs peak-white bar	1.4V
PLA7	2T-pulse	1.4V
PLA9	staircase	1.4V
PLA10	line-12 trigger pulse	5V

13. Check that the voltages at the test points on the front of the unit are each 5 ± 0.05 volts d.c.
14. Check that the differentiated staircase waveform at the Mon. Risers test point is two volts p-p.

UN20/518

15. Check that the chrominance waveform at pin 14 is 1.4 volts p-p.
Check that the amplitude of the sync pulse waveform at pin 5 is 0.9 volt p-p.
16. Check that the voltages at the output test points Chroma and Sync are each five volts d.c.

UN20/519

17. Check that the video waveform of pin PLA6 is 1.0 volt p-p. Check that 12 ± 1 volt positive-going clamp pulses 2 ± 1 microseconds in duration are present at pin PLA10.
Check that the gating pulse at pin PLA4 is negative going five-volt p-p and 10 ± 0.2 microseconds in duration.

The output of this unit is dependent on the signal/noise ratio measured on line 12 of the input signal; Fig. 3 is a calibration curve.

UN9/576 (on the associated MN2M/518)

18. Switch the UN9/576 to position 1 (Normalise) and set the Normalise control to give an output reading of one volt.

The output of each measuring unit can now be selected; the readings are normalised to enable the parameters of the signal to be read directly in the customary units.

Detailed Setting-up Instructions

Detailed setting-up Instructions are given in the following Designs Department Specifications:

GE2/585	11.74(69)
GE2/585A	11.83(69)
UN9/576	7.163
UN9/568	11.84(69)
UN20/516	11.85(69)
UN20/518	11.86(69)
UN20/519	11.87(69)

LPB 10/72

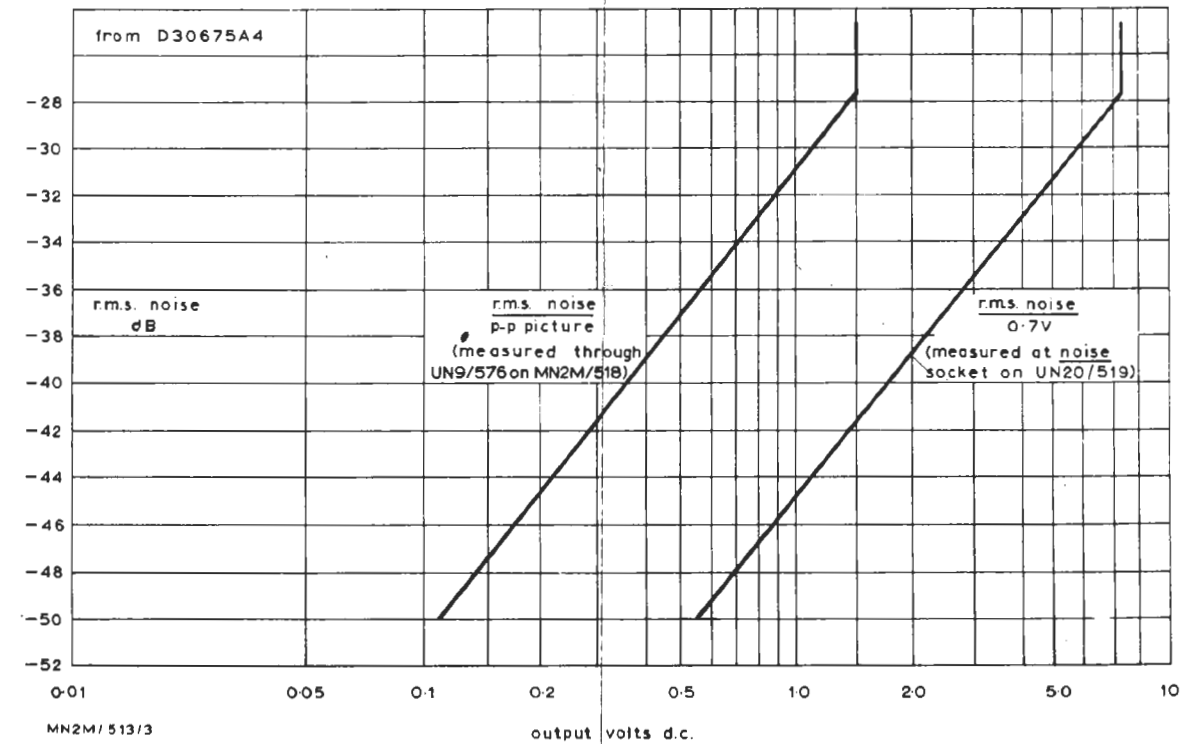


Fig. 3. Calibration Curve for the UN20/519