

Video Signal Forming Block in Scanning Television Microscope

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Abstract – There have been considered the ways of constructing a video signal forming block of the investigated microobject in scanning television microscope functioning in the television and little-frame modes of the raster formation. There has been developed the operation algorithm of the block as well as suggested the ways of frequency noises compensation in higher frequencies brought in by the high resistance.

Keywords – Scanning microscope, Video signal, Correction television mode.

I. INTRODUCTION

To provide vast functioning possibilities of the microscope the scanning raster is formed with changeable frequency. It makes necessary to widen the transmission pass of the video signal generation path. To convert the light signal into electric signal the photoelectric multiplier with 1 megohm load resistance is used that result in the significant signal distortion in higher frequencies.

II. VIDEO SIGNAL FORMING BLOCK

A structural scheme of the composite signal forming block is introduced on the fig. 1. It includes gain control preamplifier register (PAR), contrast control code register (CCR), signal polarity inversion code register (PR), black level binding code register (BLBR), white level binding code register (WLBR), output signal polarity code control register PCR, input amplifier (IA), contrast control block (CCB), signal polarity inversion block (PIB), black level binding block (BLBB), white level binding block (WLBB), quenching and synchronization pulses mixture block (QSPMB), output amplifier (OA), inverting output amplifier (IOA), switchboard (S).

Input signals of the composite video signal forming block (VSFB) are:

- gain control code (GCC);
- contrast control code (CCC);
- signal polarity code (PC) to attain either the positive or the negative image of the investigated microscopic object on the monitor screen;
- black level binding code (BLBC);
- white level binding code (WLBC);

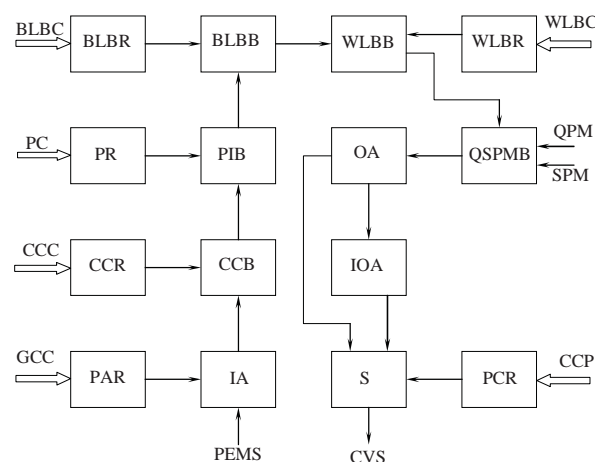


Fig. 1. Structural scheme of the video signal forming block

- control code of the output signal polarity (CCP) for adjusting according to exploited data reproducing devices;
- quenching pulses mixture (QPM);
- synchronization pulses mixture (SPM);
- photoelectric multiplier signal (PEMS) transmitted by PEM.

The unit provides:

- discrete regulation of input cascades gain of video preamplifier;
- discrete regulation of contrast of the image of the researched biological microobject;
- discrete regulation of black level and white level binding during composite video signal generating;
- discrete calibration of the necessary gain while test object exploitation;
- switching a output signal of the block of full video signal depending on the chosen operating mode;
- output signal polarity changed.

III. CONCLUSIONS

The introduced video signal processing block ensures distortion correction in high frequencies; polarity signal inversion; image contrast control; quenching and synchronization pulses mixing.

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