

Raster Forming Block in Scanning Television Microscope

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Abstract – The ways of construction of raster forming block, which provides television and little-frame modes, are considered. The analog and digital methods of formation of signals are analyzed. Ways of change of amplitude and displacement of signals of a raster are shown with the purpose of maintenance of scaling of the image of researched microobject.

Keywords – Scanning microscope, Parameters of raster, Scaling of image, Microobject.

I. INTRODUCTION

For maintenance of wide functional possibilities of a scanning television optical microscope at research of biological microobjects the scanning raster forming block must provide formation of a raster changed over a wide range of the sizes in any point of the screen of a projection tube. The analog and digital methods of raster signals forming and ways of high accuracy and forming stability of signals providing are considered.

II. RASTER FORMING BLOCK

The fig 1 shows the structural scheme of scanning raster forming block, which provides all operating modes of a microscope. The block consists of the time generator TG, the frequency divider FD1, the television synchronous generator TSG, two sweep signal forming generators in television mode SGX and SGY, five switchboards S1, S2, S3, S4, S5, sweep frequency decoder SFD, sweep step decoder SSD, two signal displacement codes registers DRX and DRY, two digital-to-analog displacement signal converters DACDX and DACDY, two analog displacement regulators ADRX and ADRY, two sweep start code registers SRX and SRY, two sweep end code registers ERX and ERY, two scanning spot location codes counters CX and CY, and also two digital-to-analog converters of digital scanning forming signal DACX and DACY, deviation amplitude regulation signal code register ARR, digital-to-analog converter of amplitude regulation signal for sweep signal DACAA, analog regulation amplitude block ARB, two amplitude regulators ARX and ARY, two matching strengtheners MSX and MSY.

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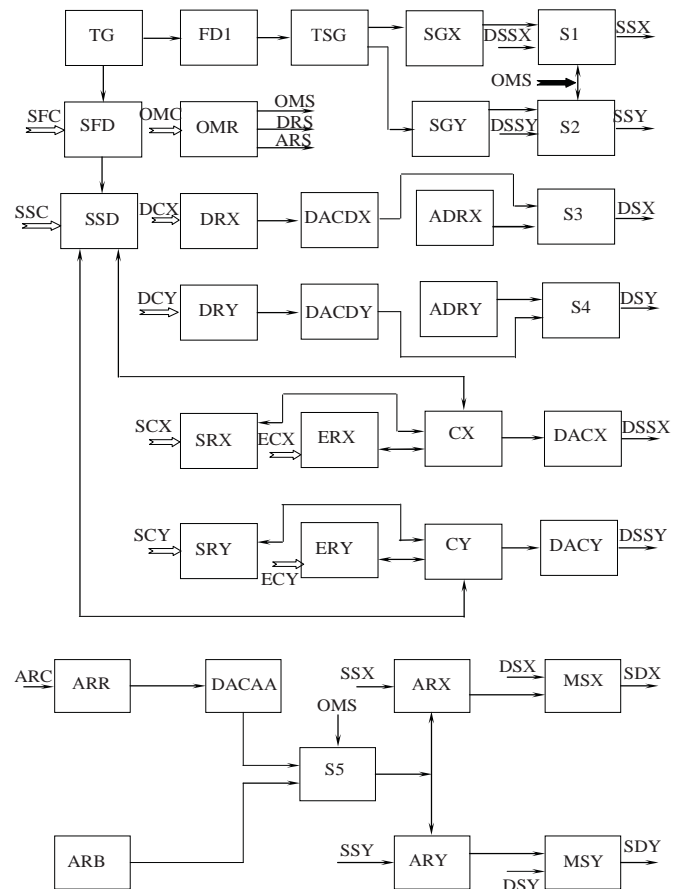


Fig.1. The structural scheme of raster forming block

The input signals of scanning raster forming block are: operation mode code OMC; scanning frequency code SFC; scanning step code SSC; raster displacement codes DCX and DCY; sweep start codes SCX and SCY, and sweep end codes on the X and Y coordinates ECX and ECY. The block output signals are: the scanning raster deviation signals DSX and DSY. The block internal signals are: the operation mode signal OMS; the scanning raster displacement regulation signal DRS; the scanning amplitude regulation signal ARS; digital sweep signals DSSX and DSSY.

III. CONCLUSIONS

The offered scanning raster forming block provides forming of a raster of the variable sizes in any place of the projection tube screen, which considerably expands functional possibilities of microscope.