Description

The present invention concerns a beam current limiting arrangement for a digital television system.

In a television receiver or monitor it is desirable to limit the amount of beam current drawn by the picture tube (or kinescope) to prevent blooming (a degradation of the electron beam spot size) and warping of the mask of the picture tube due to heat.

In a digital television system beam current limiting can be accomplished by changing the reference voltages for the digital-to-analog converters which convert the digitally processed luminance and color difference signals (such as I and Q signals) to corresponding analog signals. Such a beam current limiting (BCL) apparatus is provided by "Digit 2000 VLSI Digital TV System" available as a group of integrated circuits from the Intermetall Division of ITT Corporation, Freiburg, West Germany. This system is described in a user document of the same name published by ITT.(See the document of April 1983, pages 3.1 to 3.16.

In the BCL apparatus of the type described above, since the reference voltages for three different digital-to-analog converters are controlled, mismatches may occur which cause color errors in the reproduced image, especially at low beam current levels near the black level (0 IRE units) of the video signal.

The digital television system described above also includes an automatic kinescope bias (AKB) control network for maintaining a desired black current conduction condition. The AKB control network operates by coupling black level reference signals to the drivers of the kinescope and comparing resultant signals produced by the drivers to predetermined levels to generate bias control signals. Such an AKB control network theoretically compensates for the color error resulting from mismatches produced by the operation of the BCL apparatus. However, the BCL apparatus is disabled from operating during the operation of the AKB control network to prevent erroneous black reference signals from being generated and sensed during AKB operation. Thus, the desirable compensation described above is not provided.

In accordance with the present invention, as claimed in Claim 1 in a digital television system a beam current limiting control signal controls the reference voltage for the analog-to-digital converter which converts an analog composite television signal such as a composite video signal, representing both luminance and chrominance information, to corresponding digital samples. In this manner, the proportionate relationship between luminance and chrominance components is substantially unaffected by the beam current limiting operation and the color errors described above are correspondingly overcome.

In accordance with an embodiment of the invention, the beam current control signal is disabled from affecting the reference voltage for the analog-to-digital converter during horizontal blanking intervals. This avoids errors in signal processing functions that occur during the horizontal blanking interval such as synchronization pulse detection and sensing the amplitude of the color burst component for the purpose of automatic chroma control (ACC).

In accordance with another embodiment of the invention, a clamp circuit coupled to the analog-to-digital converter prevents the conversion of portions of the analog composite video signal near the black level (0 IRE units) from being substantially affected by the beam current control signal. This reduces the loss of details in dark areas of the image.

These and other aspects of the present invention will be described in detail with reference to the accompanying Drawings in which:

FIGURE 1 is a block diagram of a digital television system including a beam current limiting arrangement constructed in accordance with the present invention; and

FIGURE 2 is a schematic diagram of an implementation of a portion of the beam current limiting arrangement shown in FIGURE 1.

The television system shown in FIGURE 1 includes a source 1 of an analog composite video signal, including luminance, chrominance and synchronization components, as is graphically indicated by the associated waveform. The composite video signal is coupled to an analog-to-digital converter (ADC) 3 which produces digital samples of the composite video signal. ADC 3 receives a sampling signal having a frequency which satisfies the Nyquist criteria (e.g., a frequency four times the frequency of the color subcarrier) from a sampling signal generator (not shown). The sampling signal generator also generates clock signals for other digital portions of the television system.

The digital samples representing the composite video signal are coupled (as indicated by the double-line arrow) to a luminance/chrominance (luma/chroma) signal component separator 5 such as a digital comb filter. Luma/chroma separator 5 produces separate groups of digital samples representing luminance and chrominance information. The digital luminance samples (y) are coupled to a digital luminance processor 7 which processes the digital luminance samples to control the contrast, peaking and other characteristics of a reproduced image

The digital chrominance samples are coupled to a digital chrominance processor 9 which demodulates the chrominance signals to produce

digital color difference samples (r-y and b-y) and processes the digital color difference samples to control the saturation and tint of a reproduced image. The processed digital luminance samples and the processed digital color difference samples are converted by respective digital-to-analog converters (DACs) 11, 13 and 15 to corresponding analog signals.

Another DAC 17 converts a digital word representing the brightness of a reproduced image to a corresponding d.c. signal. The luminance, brightness and color difference signals are applied to and additively combined by a matrix 19 to produce low level red (r), green (g) and blue (b) color signals. The low level color signals are suitably amplified by respective drivers of a driver unit 21 and the resulting amplified red (R), green (G) and blue (B) color signals are coupled to respective electron guns of a picture tube 23.

The digital samples representing the composite video signal are also coupled from ADC 3 to a deflection unit 25. Unit 25 separates horizontal and vertical synchronization components from the digital composite video samples in order to generate horizontal and vertical deflection signals (HD and VD) for deflection coils 27 associated with picture tube 23. A horizontal flyback pulse (HF) generated by deflection unit 25 in connection with the generation of the horizontal deflection signal is coupled to a high voltage power supply 29. High voltage power supply 29 generates the high operating voltage for picture tube 23.

Deflection unit 25 also generates a horizontal blanking pulse (HB) for each horizontal synchronization pulse. The duration of each horizontal blanking encompasses a respective horizontal synchronization pulse, a respective blanking (or "back porch") level following the horizontal synchronization pulse and a respective color burst component superimposed on the black level as is indicated by the waveform of the analog composite video signal shown in FIGURE 1.

A beam current limiting (BCL) control unit 31 senses the level of a current, conventionally known as a "resupply" current, drawn from a source of supply voltage (B+) coupled to high voltage supply 29 to determine the magnitude of beam current generated by picture tube 23 in order to generate control signals for reducing the beam current should it exceed a predetermined threshold. A "brightness" beam current limiting (BCL) control signal is coupled to a reference voltage source 17a which supplies a reference voltage to brightness DAC 17 to reduce the brightness of the reproduced image and thereby the beam current should the beam current be excessive.

The digital television system so far described may be constructed using the integrated circuits of the ITT digital television system referred to above.

In the ITT digital television system, a BCL control signal is also coupled to reference voltage supply units 11a, 13a and 15a which supply respective individual reference voltages to luminance and color difference DACs 11, 13 and 15. The BCL control signal determines the level of reference voltage and thereby the amplitude of analog output signal of the respective D/A converter so as to reduce excessive beam current drawn by picture tube 21.

Unfortunately, it has been found that when the reference voltages of luminance and color difference DACs 11, 13 and 15 are changed in response to a BCL control signal, the changes of the reference voltages may not track (be proportional to) one another. Such reference voltage tracking errors cause corresponding amplitude tracking errors of the luminance and two color difference signals produced by DACs 11, 13 and 15 and thereby tend to produce color errors in the reproduced image. The color errors are most perceptable under low light image conditions where reference voltage mismatches may correspond to relatively large portions of the amplitudes of the output signals of DACs 11, 13 and 15.

In accordance with an aspect of the present invention, to avoid color errors, BCL control unit 31 does not control the individual reference voltages of luminance and color difference DACs 11, 13 and 15 (it still controls the reference voltage for brightness DAC 17) but instead, controls the single reference voltage for ADC 3 which converts the composite video signal, including both luminance and chrominance components, to corresponding digital samples. Since changes in the reference voltage for ADC 3 affect both luminance and chrominance components and the various color components of the chrominance component in the same manner, proportionality between the components is maintained and color errors are therefore not produced.

Specifically with respect to FIGURE 1, BCL control unit 31 generates a "contrast" BCL control signal which is coupled through a switch 33 (the function of which will be described below) to reference voltage supply 3a serving as analog-to-digital control means for ADC 3. The BCL control signal controls the reference voltage for ADC 3 so as to reduce the values of digital luminance and chrominance samples and thereby reduce excessive beam currents produced by picture tube 21.

In accordance with another aspect of the present invention, previously mentioned switch 33 is responsive to the horizontal blanking pulse (HB) generated by deflection unit 25 to inhibit reference voltage source 3a from responding to the contrast BCL control signal. Thus conversion of the portions of the composite video signal encompassed by the

duration of each horizontal blanking pulse, i.e., the respective horizontal synchronization pulse, blanking level and color burst component, is not affected by the beam current limiting operation. The purpose of this is to ensure that the values of the digital samples corresponding to the horizontal synchronization pulses and the color burst are not changed in accordance with the beam current. If this were not done, the digital samples corresponding to horizontal synchronization components could be reduced in value to a point at which they would go undetected by deflection unit 25. Then, the digital samples corresponding to the color burst component could be changed in value and thereby adversely affect various functions of chrominance processor 9 such as automatic chroma control (ACC).

In accordance with another aspect of the invention, a clamping circuit 35 is coupled to reference voltage supply 3a for ADC 3 to prevent the conversion of portions of the analog composite video signal near the black level (0 IRE units) from being substantially affected in response to the contrast BCL control signal. This prevents the loss of detail in dark portions of an image due to beam current limiting action.

BCL control unit 31 provides a sequential type of control in which no beam limiting action takes place for a relatively low amplitude range of beam current, the contrast BCL control signal causes continuous reduction of contrast for a medium amplitude range of beam current, and the brightness BCL control signal causes a continuous reduction of brightness while the contrast BCL signal maintains the contrast at the value reached in the medium range for a relatively high amplitude range of beam current. Sequential BCL control units of this type are described in U. S. Patent 4,126,884 (Shanley, II) and U. S. Patent 4,253,110 (Harwood et al.).

An implementation for performing the functions of ADC 3, ADC reference voltage supply 3a, switch 33 and clamp 35 will now be described with reference to FIGURE 2. ADC 3 and analog-to-digital control means 3a provide a "flash" type analog-to-digital converter including a multi-tap resistive voltage divider 201 connected between a source of a stable relatively high voltage (VH) and a source of a stable relatively low voltage (VL) and a plurality of voltage comparators 203. Comparators 203 each have inverting (-) inputs coupled to respective taps of voltage divider 201 to form a ladder network and noninvertering (+) inputs coupled to receive the analog composite video signal.

Voltage divider 201 supplies successively higher threshold voltages to the comparators starting with the comparator closest to the bottom of the figure. This arrangement forms a binary ladder network which generates a high logic level at the output of each comparator which receives a threshold voltage lower than the amplitude of the analog composite video signal. The comparators and corresponding resistors are labelled with decimal values to which they respectively correspond. The outputs of comparators 203 are coupled to a binary to grey code converter 205. Code converter 205 may simply comprise a read-only-memory (ROM) look-up table arrangement. The digital samples representing the analog composite video signals are produced at the output of code converter 205.

An NPN transistor 207 arranged as an emitter-follower has its collector connected to the source of high voltage (VH) and its emitter coupled to the inverting input of the comparator corresponding to the highest digital value (127) through a diode 209. The contrast BCL control signal is coupled to the base of transistor 207. The voltage difference between the inverting input of the comparator corresponding to the highest digital value 127 and the inverting input of the comparator corresponding to the lowest digital value (1) corresponds to the reference voltage for ADC 3. The normal reference voltage condition occurs when transistor 207 is rendered non-conductive, as will be explained below. At this time, the current flowing through diode 209 is at a relatively high level causing the reference voltage to be at a relatively low level compared to the condition when transistor 207 is conductive.

As indicated by the waveform, the contrast BCL control signal increases with increases in beam current (BC). Therefore, when transistor 207 is conductive, the current flowing through diode 209 decreases and the reference voltage for ADC 3 increases with increases in beam current. As the reference voltage increases, the threshold voltage for each of comparators 203 for values greater than 31 (as will be explained below) increases and the contrast decreases.

The contrast is decreased at higher levels of reference voltage because, at higher levels of reference voltage, higher amplitudes of the analog composite video signal are required to produce the same digital values produced at lower levels of reference voltage. At a predetermined level of the BCL control signal, diode 209 will become reversed biased thus limiting contrast reduction to a corresponding limit. In essence, by controlling the reference voltage for ADC 3, contrast BCL control signal controls the range of values for the digital samples produced by ADC 3.

The horizontal blanking (HB) pulses, which for this embodiment are negative-going as indicated by the waveform, are coupled to the base of transistor 207 through an isolation diode 210 and causes transistor 207 to be rendered nonconduc-

tive. This inhibits changes in the contrast BCL control signal from affecting the conversion operation, i.e., it restores the normal reference voltage condition. Thus, coupling the horizontal blanking pulse to the base of transistor 207 corresponds to the function of switch 33 shown in the block diagram of FIGURE 1.

The clamp circuit 35 of the block diagram of FIGURE 1 comprises a Zener diode 211 coupled to the noninverting (threshold voltage) input of the comparator (31) corresponding to the black or O IRE level. Zener diode 211 prevents the threshold voltage corresponding to the black level (and the threshold voltages corresponding to analog composite video signal level below the black level) from being modified by the contrast BCL control signal.

Claims

1. A digital television system including an analog-to-digital converter (3) for converting a composite television signal, including both luminance and chrominance components, to corresponding digital samples, a digital processing section (7,9) for digitally processing said digital samples to produce at least first (b-y) and second (y) groups of digital samples representing respective components of image information, a first digital-to-analog converter (15) for producing a first analog signal corresponding to said first group of digital samples, a second digital-to-analog converter (11) for producing a second analog signal corresponding to said second group of digital samples, a picture tube (23) responsive to said first and second analog signals for producing an image and being capable of generating an excessive beam current, in response to said first and second analog signals, and an apparatus for reducing said excessive beam currents comprising,

   beam current control means (31) coupled to said picture tube for generating a control signal representing the beam current generated by said picture tube; said apparatus being characterized by

   analog-to-digital control means (3a) coupled to said analog-to-digital converter (3) and responsive to said beam current representative control signal for controlling the range of values of said digital samples representing said analog composite television.

2. A system according to claim 1, characterized in that

   said analog-to-digital control means (3a) includes a reference voltage source (VH, VL, 201) for providing a reference voltage which determines the range of values of said digital samples representing said analog composite video signals, said analog-to-digital control means is coupled to said reference voltage source for controlling said reference voltage in response to said beam current control signal.

3. A system according to claim 2, characterized in that

   a clamping circuit (211) is coupled to said analog-to-digital control means for maintaining the range of values of said digital samples substantially unaffected by said beam current control signal for portions of said analog composite television signal from a black level.. toward synchronization pulse tips.

4. A system, according to claim 1, 2 or 3 characterized in that

   said analog-to-digital control means (3a) includes inhibiting means (207) for inhibiting the operation of said analog-to-digital converter (3) from being affected by said beam current control signal for predetermined portions of said analog composite television signal.

5. A system according to claim 4, characterized in that

   said predetermined portions include horizontal synchronization pulses of said analog composite television signal.

6. A system according to claim 5, characterized in that

   said predetermined portion also includes the blanking level regions of said analog composite television signal.

7. A system according to claim 5 or 6, characterized in that

   said predetermined portion also includes color burst intervals of said analog composite video signal.

8. A system according to any of claims 4-7, characterized in that

   said inhibiting means (207) is responsive to horizontal blanking pulses (HB) generated by said digital processing section (25) during a

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tive. This inhibits changes in the contrast BCL control signal from affecting the conversion operation, i.e., it restores the normal reference voltage condition. Thus, coupling the horizontal blanking pulse to the base of transistor 207 corresponds to the function of switch 33 shown in the block diagram of FIGURE 1.

The clamp circuit 35 of the block diagram of FIGURE 1 comprises a Zener diode 211 coupled to the noninverting (threshold voltage) input of the comparator (31) corresponding to the black or 0 IRE level. Zener diode 211 prevents the threshold voltage corresponding to the black level (and the threshold voltages corresponding to analog composite video signal level below the black level) from being modified by the contrast BCL control signal.

Claims

1. A digital television system including an analog-to-digital converter (3) for converting a composite television signal, including both luminance and chrominance components, to corresponding digital samples, a digital processing section (7,9) for digitally processing said digital samples to produce at least first (b-y) and second (y) groups of digital samples representing respective components of image information, a first digital-to-analog converter (15) for producing a first analog signal corresponding to said first group of digital samples, a second digital-to-analog converter (11) for producing a second analog signal corresponding to said second group of digital samples, a picture tube (23) responsive to said first and second analog signals for producing an image and being capable of generating an excessive beam current, in response to said first and second analog signals, and an apparatus for reducing said excessive beam currents comprising,

   beam current control means (31) coupled to said picture tube for generating a control signal representing the beam current generated by said picture tube; said apparatus being characterized by

   analog-to-digital control means (3a) coupled to said analog-to-digital converter (3) and responsive to said beam current representative control signal for controlling the range of values of said digital samples representing said analog composite television.

2. A system according to claim 1, characterized in that

   said analog-to-digital control means (3a) includes a reference voltage source (VH, VL, 201) for providing a reference voltage which determines the range of values of said digital samples representing said analog composite video signals, said analog-to-digital control means is coupled to said reference voltage source for controlling said reference voltage in response to said beam current control signal.

3. A system according to claim 2, characterized in that

   a clamping circuit (211) is coupled to said analog-to-digital control means for maintaining the range of values of said digital samples substantially unaffected by said beam current control signal for portions of said analog composite television signal from a black level.. toward synchronization pulse tips.

4. A system, according to claim 1, 2 or 3 characterized in that

   said analog-to-digital control means (3a) includes inhibiting means (207) for inhibiting the operation of said analog-to-digital converter (3) from being affected by said beam current control signal for predetermined portions of said analog composite television signal.

5. A system according to claim 4, characterized in that

   said predetermined portions include horizontal synchronization pulses of said analog composite television signal.

6. A system according to claim 5, characterized in that

   said predetermined portion also includes the blanking level regions of said analog composite television signal.

7. A system according to claim 5 or 6, characterized in that

   said predetermined portion also includes color burst intervals of said analog composite video signal.

8. A system according to any of claims 4-7, characterized in that

   said inhibiting means (207) is responsive to horizontal blanking pulses (HB) generated by said digital processing section (25) during a

time interval encompassing respective horizontal synchronization pulses, blanking level regions and color burst intervals.

Revendications

1. Système de télévision numérique comprenant un convertisseur analogique-numérique (3) pour convertir un signal composite de télévision, comportant à la fois des composantes de luminance et de chrominance, en échantillons numériques correspondants, une section de traitement numérique (7, 9) pour traiter numériquement lesdits échantillons numériques et produire au moins de premier (b-y) et second (y) groupes d'échantillons numériques représentant des composantes respectives de l'information d'image, un premier convertisseur numérique-analogique (15) pour produire un premier signal analogique correspondant audit premier groupe d'échantillons numériques, un second convertisseur numérique-analogique (11) pour produire un second signal analogique correspondant audit second groupe d'échantillons numériques, et un tube-image (23) répondant auxdits premier et second signaux analogiques pour produire une image et qui est capable de produire un courant excessif de faisceau en réponse auxdits premier et second signaux analogiques, et un appareil pour réduire lesdits courants excessifs des faisceaux, comprenant,

   un moyen de réglage de courant de faisceau (31) couplé audit tube-image pour produire un signal de réglage représentant le courant de faisceau produit par ledit tube-image ; ledit appareil étant caractérisé par

   un moyen de commande analogique numérique (3a) couplé audit convertisseur analogique numérique (3) et répondant audit signal de réglage représentatif du courant de faisceau pour contrôler la plage des valeurs desdits échantillons numériques représentant ledit signal analogique composite de télévision.

2. Appareil selon la revendication 1, caractérisé en ce que

   ledit moyen de commande analogique numérique (3a) comprend une source de tension de référence (VH, VL, 201) pour produire une tension de référence qui détermine la plage des valeurs desdits échantillons numériques représentant lesdits signaux vidéo composites analogiques, ledit moyen de commande analogique-numérique est couplé à ladite source de tension de référence pour contrôler ladite tension de référence en réponse audit signal de réglage de courant de faisceau.

3. Appareil selon la revendication 2, caractérisé en ce que

   un circuit de blocage (211) est couplé audit moyen de commande analogique-numérique pour maintenir la plage des valeurs desdits échantillons numériques sensiblement non affectée par ledit signal de réglage de courant de faisceau pour des portions dudit signal composite analogique de télévision d'un niveau du noir vers des pics d'impulsion de synchronisation.

4. Appareil selon la revendication 1, 2 ou 3, caractérisé en ce que

   ledit moyen de commande analogique-numérique (3a) comprend un moyen d'inhibition (207) pour empêcher le fonctionnement dudit convertisseur analogique-numérique (3) d'être affecté par ledit signal de réglage de courant de faisceau pendant des portions prédéterminées dudit signal analogique composite de télévision.

5. Appareil selon la revendication 4, caractérisé en ce que

   lesdites portions prédéterminées comprennent des impulsions de synchronisation horizontale dudit signal composite analogique de télévision.

6. Appareil selon la revendication 5, caractérisé en ce que

   ladite portion prédéterminée comporte également les régions de niveau d'effacement dudit signal analogique composite de télévision.

7. Appareil selon la revendication 5 ou 6, caractérisé en ce que ladite portion prédéterminée comprend également des intervalles de salve couleur dudit signal composite analogique vidéo.

8. Appareil selon l'une quelconque des revendications 4-7, caractérisé en ce que

   ledit moyen d'inhibition (207) répond aux impulsions d'effacement horizontal (HB) produites par ladite section de traitement numérique (25) pendant un intervalle de temps contenant des impulsions respectives de synchroni-

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sation horizontale, des régions du niveau d'effacement et des intervalles de salve couleur.

Ansprüche

1. Digitales Fernsehsystem mit einem Analog/Digital-Konverter (3) zum Umsetzen eines Fernsehsignalgemisches, das sowohl Leuchtdichte- als auch Farbartanteile enthält, in entsprechende digitale Abtastwerte, einem digitalen Verarbeitungsabschnitt (7, 9) zum digitalen Verarbeiten der digitalen Abtastwerte, um mindestens eine erste (b-y) und eine zweite (y) Gruppe von digitalen Abtastwerten zu erzeugen, die entsprechende Bildinformationsanteile repräsentieren, einem ersten Digital/Analog-Konverter (15) zum Erzeugen eines ersten Analog-Signals entsprechend der erwähnten ersten Gruppe von digitalen Abtastwerten, einem zweiten Digital/Analog-Konverter (11) zum Erzeugen eines zweiten Analog-Signals entsprechend der erwähnten zweiten Gruppe von digitalen Abtastwerten, einer Bildröhre (23), welche auf das erste und das zweite Analog-Signal anspricht, um ein Bild zu erzeugen, und welche in der Lage ist, in Ansprache auf das erste und das zweite Analogsignal einen übermäßigen Strahlstrom zu erzeugen, und einer Einrichtung zum Verringern der übermäßigen Strahlströme, die eine Strahlstrom-Steueranordnung (31) enthält, welche mit der Bildröhre gekoppelt ist, um ein Steuersignal zu erzeugen, welches den durch die Bildröhre erzeugten Strahlstrom repräsentiert;
dadurch gekennzeichnet, daß die genannte Einrichtung gekennzeichnet ist durch

eine Analog/Digital-Steuereinrichtung (3a), die mit dem Analog/Digital-Konverter (3) gekoppelt ist und auf das für den Strahlstrom repräsentative Steuersignal anspricht, um den Wertebereich der digitalen Abtastwerte, die das analoge Videogemisch darstellen, zu steuern.

2. Einrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Analog/Digital-Steuereinrichtung (3a) eine Referenzspannungsquelle (VH, VL, 201) zur Bereitstellung einer Referenzspannung enthält, die den Wertebereich der das analoge Videosignalgemisch repräsentierenden digitalen Abtastwerte bestimmt und daß die Analog/Digital-Steuereinrichtung mit der Referenzspannungsquelle gekoppelt ist, um die Referenzspannung in Ansprache auf das Strahlstromsteuersignal zu steuern.

3. Einrichtung nach Anspruch 2, dadurch gekennzeichnet, daß eine Klemmschaltung (211) mit der Analog/Digital-Steuereinrichtung gekoppelt ist, um den Wertebereich der digitalen Abtastwerte für Teile des analogen Videosignalgemisches von einem Schwarzwert hin zu Synchronisierpulsspitzen im wesentlichen unbeeinflußt von dem Strahlstromsteuersignal zu halten.

4. Einrichtung nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß die Analog/Digital-Steuereinrichtung (3a) eine Sperreinrichtung (207) enthält, um zu verhindern, daß der Betrieb des Analog/Digital-Konverters (3) für bestimmte Teile des analogen Videosignalgemisches durch das Strahlstromsteuersignal beeinflußt wird.

5. Einrichtung nach Anspruch 4, dadurch gekennzeichnet, daß die bestimmten Teile horizontal Synchronisierimpulse des analogen Videosignalgemisches enthalten.

6. Einrichtung nach Anspruch 5, dadurch gekennzeichnet, daß der bestimmte Teil außerdem die Austastwertbereiche des analogen Videosignalgemisches enthält.

7. Einrichtung nach Anspruch 5 oder 6, dadurch gekennzeichnet, daß der bestimmte Teil außerdem Farbsynchronisierimpulsintervalle des analogen Videosignalgemisches enthält.

8. Einrichtung nach einem der Ansprüche 4 bis 7, dadurch gekennzeichent, daß die Sperreinrichtung (207) auf Horizontalaustastpulse (HP) anspricht, welche durch den digitalen Verarbeitungsabschnitt (25) während eines Zeitintervalles erzeugt werden, das entsprechende Horizontalsynchronisierimpulse, Austastwertbereiche und Farbsynchronisierimpulsintervalle umfaßt.