Description

The invention relates to a signal-dropout correction circuit for correcting video signals disturbed by signal dropouts, which circuit comprises

—a storage circuit for the continuous storage of at least one preceding line of the video picture,

—switching means for connecting a video-signal output to either an output of the storage circuit or a video-signal input, and

—a signal-dropout detector for comparing the level of the video signal with reference level in order to switch the switching means to such a position that the storage circuit is read out when the level of the video signal drops below said reference level.

Such a circuit is used *inter alia* in a video-disc player known by the name of "Laservision".

In the known apparatus the reference level lies below the lower level of the line-synchronizing pulses, which is for example 300 mV below black level for PAL-signals. Therefore it happens frequently that signal dropouts of small depth are not corrected, which signal dropouts become visible especially in the case of pictures with a dark background.

It is object of the invention to improve the known circuit in this respect and to this end the invention is characterized by a filter circuit for extracting the colour carrier from the video signal before this signal is applied to the signal-dropout detector.

The step in accordance with the invention enables the reference level to be selected just below black level, so that substantially more signal-dropouts are detected.

The invention will now be described in more detail, by way of example, with reference to the accompanying drawing, in which:

Figure 1 shows some signal waveforms to explain the operation of the circuit in accordance with the invention, and

Figure 2 shows an embodiment of a circuit in accordance with the invention.

Figure 1a schematically represents a demodulated video signal comprising a luminance signal and a colour carrier wave. Between the instants t_1 and t_2 the signal comprises a line-synchronizing pulse of a level A_1, which at the instant t_2 changes to black level A_2. This is followed by the colour burst from the instant t_3 to the instant t_4. The colour burst and the line-synchronizing pulse are situated between instants t_0 and t_5, between which no picture signal is present (the so-called line-blanking interval). Between the instants t_5 and t_6 a picture signal appears. This signal comprises a luminance signal with a minimum value of A_2 (black level), which luminance signal is represented as a signal of a level A_3, *i.e.* a line of constant brightness, in the present case. This brightness corresponds to a colour which is determined by the colour carrier and which is constituted by high-frequency oscillation between the levels A_4 and A_5. For example, for saturated red the level A_4 lies below the black level A_2, but above the level A_1 defined by the line-synchronizing pulse.

The video signal may be subject to signal-dropouts, for example when the signal originates from a video disc or video recorder. It is known to detect such a drop-out and to insert a corresponding part of a preceding line or a corresponding line of a preceding field at this location. For this purpose the apparatus shown in Figure 2 comprises a delay network 1, for example a glass delay line, a shift register or a memory circuit, with a delay capacity of one line period the signal on the video output 2 being constantly applied to the input of this delay network. The video signal which has been delayed by one line period is then constantly available on the output 3 of the delay network 1. By means of a switch 5 output 2 can be connected either to the output of the delay network 1 or to a video input 6. The switch 5 is controlled by a comparator 7, which has one input connected to the video input 6 and the other input to a reference-voltage source 8 carrying a reference voltage V_{ref}.

In order to detect signal dropouts the detection level in the known apparatus is selected below the level A_1 (Figure 1a), *i.e.*. $V_{ref}<A_1$, which level remains below the colour burst and the colour carrier. If such a signal dropout occurs, this will be detected by the comparator 7 when this signal drop-out is deeper than the level V_{ref}. Comparator 7 then connects output 2 to the delay network 1.

In order to ensure that signal dropouts appearing in the picture are compensated for, the line-blanking interval detector 9 supplies a pulse signal S_{b1} (Figure 1c) which is applied to the comparator 7 as a disable signal, so that switch 5 remains connected to input 6 between the instants t_0 and t_5.

The known method only detects deep signal dropouts. However, it frequently happens that shallow dropouts occur which only manifest themselves as colour dropouts in pictures with a dark background.

In order to solve this problem the circuit shown Figure 2 comprises a filter 10 having such a cut-off frequency that the luminance signal is transmitted and the colour carrier is not transmitted. The transmitted signal S_y then obtained is shown in Figure 1b. When this filter is arranged between the input 6 and the comparator 7, the comparator 7 will compare the luminance signal, which has a minimum level equal to the black level a_2, with a reference voltage V_{ref} between the instants t_5 and t_6, only, *i.e.* not during the line-blanking interval. The reference level can now be selected just below the black level A_2, so that minimal signal dropouts can still be detected.

Claims

1. A signal dropout correction circuit for correcting video signals disturbed by signal dropouts, which circuit comprises:

— a storage circuit (1) for the continuous

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Claims

1. A signal dropout correction circuit for correcting video signals disturbed by signal dropouts, which circuit comprises:

— a storage circuit (1) for the continuous

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storage of at least one preceding line of the video picture,

—switching means (5) for connecting a video-signal output (2) to either an output (3) of the storage circuit or a video-signal input (6), and

— a signal-dropout detector (7) for comparing the level of video signal with a reference level in order to switch the switching means (5) to such a position that the storage circuit (1) is read out when the level of video signal drops below said reference level, characterized by a filter circuit (10) for extracting the colour carrier from the video signal before this signal is applied to the dropout detector (7).

2. A circuit as claimed in Claim 1, characterized by a line-blanking interval detector (9) for detecting the line blankings in the video signal and means for disabling the drop out detection when a line blanking is detected.

Patentansprüche

1. Signalausfallkorrekturschaltung zum Korrigieren der durch Signalausfälle gestörten Videosignale, und diese Schaltung enthält

—eine Speicherschaltung (1) zum ununterbrochenen Speichern wenigstens einer vorangehenden Zeile des Videobilds,

—Schaltmittel (5) zum Anschliessen eine Videosignalausgangs (2) entweder an einen Ausgang (3) der Speicherschaltung oder an einen Videosignaleingang (6), und

—einen Signalausfalldetektor (7) zum Vergleichen de Pegels des Videosignals mit einem Bezugspegel zum Umschalten des Schaltmittels (5) in eine derartige Position, dass die Speicherschaltung (1) gelesen wird, wenn der Pegel des Videosignals unter diesen Bezugspegel abfällt, dadurch gekennzeichnet, dass eine Filterschaltung (10) zum Ausblenden des Farbträgers aus dem Videosignal vor dem Anlegen dieses Signals an den Ausfalldetektor (7) vorgesehen ist.

2. Schaltung nach Anspruch 1, *dadurch gekennzeichnet,* dass ein Horizontalaustastdetektor (9) zum Detektieren der Horizontalaustastungen im Videosignal und Mittel zum Sperren der Ausfalldektion vorgesehen sind, wenn eine Horizontalaustastung detektiert wird.

Revendications

1. Circuit de correction de pertes de signal pour corriger des signaux vidéo perturbés par des pertes de signal, comportant:

—un circuit de memorisation (1) pour la mémorisation continue d'au moins une ligne précédente de l'image vidéo,

—des moyens de commutation (5) pour relier une sortie de signal vidéo (2) soit à une sortie (3) du circuit de mémorisation, soit à une entrée de signal vidéo (6) et

—un détecteur de perties de signal (7) pour comparer le niveau du signal vidéo avec un niveau de référence afin d'amener les moyens de commutation (5), lorsque le niveau du signal vidéo descend jusqu'au-dessous dudit niveau de référence, dans une position telle que le circuit de mémorisation (1) soit lu, caractérisé par un circuit de filtrage (10) pour extraire la porteuse de couleur du signal vidéo avant l'application de ce signal au détecteur de pertes de signal (7).

2. Circuit selon la revendication 1, caractérisé par un détecteur d'intervalles de suppression de ligne (9) pour détecter les impulsions de suppression de ligne dans le signal vidéo et par des moyens d'inhibition de la détection de pertes de signal lors de la détection d'une impulsion de suppression de ligne.

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