Description

The invention relates to an apparatus for reading a disk-shaped record carrier on which video information is recorded in accordance with an optically detectable structure in substantially concentric or spiral-shaped tracks, which video information comprises address signals having predetermined positions with respect to field pulses of the video information, which apparatus comprises an optical read unit comprising a read detector for detecting the information contained in a read beam after co-operation with a record carrier and a deflection element which cooperates with the read beam to vary the radial scanning position on the record carrier and, in response to a control signal, is movable in two opposite directions relative to a centre position, the apparatus further comprising a drive means for radially moving the optical read unit and a servo control loop for controlling the radial scanning position on the record carrier, which servo control loop includes the deflection element and a measuring detector for measuring the radial deviation of the scanning position relative to the desired track and for deriving therefrom the control signal for the deflection element, the servo control loop comprising switching means for rendering said servo control loop inoperative during controlled time intervals and an actuating device for causing the deflection element to move at least towards the centre position during said time intervals.

Such apparatus is disclosed in United States Patent Specification 4,330,880. The apparatus disclosed in said Patent Specification enables a desired program section on the record carrier to be located rapidly whilst maintaining at least a reasonable picture reproduction during this search operation.

In addition to the visual search for a desired program section a desired program section on such record carriers can also be located automatically. The video pictures recorded on such a record carrier generally have an address in the form of an individual picture number, which is inserted as a digital signal in the vertical flyback period of the video signal. This means that by keying-in picture number an automatic-search operation can be started, a control signal for the drive means of the optical read unit being obtained by comparing the number of the picture being read instantaneously with the desired picture number, so that said read unit can be moved very rapidly to the desired radial position to read the desired video picture. During this search operation, when very rapid movement of the optical read element may occur, it is no longer important to maintain the picture reproduction. However, during the search operation it is important that information about the position of the scanning spot on the record carrier is available.

A first object of the invention is to provide an apparatus of the type mentioned in the operating paragraph in which this information about the position of the scanning spot remains available in a reliable manner during said automatic search operation.

A second object of the invention is to provide an apparatus which enables a search operation to be performed in a very simple manner whilst maintaining the picture reproduction.

In order to attain the first object of the invention the apparatus according to the openings paragraph is characterized in that, the apparatus is provided with a control circuit having an input which is coupled to the read detector and an output which is coupled to the switching means, which control circuit serves for the detection of field pulses being read or a synchronizing signal in the video signal, which synchronizing signal is time-correlated to said pulses, and for supplying a periodic control signal to the switching means for alternatively rendering the servo control loop operative and inoperative, during a translation of the read unit, the phase relation between the control signal and the field pulses being in conformity with the positions of the address signals with respect to the field pulses so as to cause the address signals to be read out, when the servo loop is operative.

The invention provides the possibility of reading the address signals periodically in a reliable manner during an automatic search operation, so that it is always known on which track the scanning spot is located instantaneously, which is essential for the control of the actuating device of the optical read element.

It is remarked that from US—A—4,321,700 an optical reading apparatus for reading record carriers in the form of a rectangular plate with record segments in the form of arcs across the width of the plate by means of a polygon scanner is known. The information contains end-of-data signals at regular intervals. During reading of the information recorded a circuit detects the end-of-data signals and supplies a periodic control signal to a switch for alternatively rendering the servo-loop for fine tracking operative and inoperative. However, the object of this is to ensure that successive scans across the plate-shaped record carrier performed by the polygon scanner start at the beginning of the correct track.

In order to attain the second object of the invention the apparatus according the openings paragraph is characterized in that, the apparatus is provided with a control circuit having an input which is coupled to the read detector and an output which is coupled to the switching means, which control circuit serves for the detection of field pulses being read or a synchronizing signal in the video signal, which synchronizing signal is time-correlated to said pulses and for supplying a periodic control signal to the switching means for alternately rendering the servo control loop operative and inoperative during a translation of the read unit, the phase of said period control signal having a predetermined relationship with a field pulse which initiates said control signal, the control circuit being adapted to render the servo

control loop operative for a time interval which covers a plurality of field periods and to render said servo control loop inoperative in a consecutive time interval whose length at least substantially corresponds to one vertical flyback period of the video signal, so as to cause the deflection unit to be moved towards the central position when the servo loop is inoperative.

Since the radial speed with which the optical read unit is moved during a visual search operation is substantially smaller than during an automatic search operation the intervals in which the servo control loop is closed may be substantially longer. Since in accordance with the invention the interval in which said servo control loop is inoperative at least substantially coincides with a vertical flyback period of the video signal, it is achieved that the disturbance of the picture reproduction occurring in this interval at least for a substantial part falls outside the picture being reproduced and is therefore hardly disturbing.

Attention is drawn to EP—A—0 092 166 which contains prior art falling under Art. 54(3) EPC.

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

Figure 1 shows an embodiment of the invention,

Figure 2 shows an example of the control circuit used therein, and

Figure 3 represents the signals appearing in this circuit.

The apparatus shown in Figure 1 comprises a spindle 2 which extends through a central aperture in a disk-shaped record carrier 1 and rotates said record carrier in a direction V. It is assumed that this record carrier 1 has information tracks on its upper surface, which upper surface is a reflecting surface, and that the record carrier material itself is transparent, so that this record carrier can be read by means of an optical read unit which is situated underneath the record carrier.

This optical read unit is accommodated in a housing 3 and comprises a radiation source 4, which produces a read beam A. This read beam A is directed to the record carrier 1 *via* a semi-transparent mirror 5, a deflection element 6 in the form of a mirror, and a lens system 7, said lens system 7 focusing said beam so as to form a scanning spot S. The beam which has been reflected by the record carrier is subsequently directed towards a detection system 8 *via* the lens system 7, the mirror 6 and the semi-transparent mirror 5. This detection system 8 is shown only schematically and comprises a read detector 9 for detecting the video information contained in the radiation beam, which video information becomes available for further processing on a signal terminal 10.

Moreover, this detection system 8 comprises a measuring detector 11 for measuring the deviation of the radial scanning position of the scanning spot S relative to the desired track. The error signal supplied by this measuring detector 11 is applied to an actuating device 14 *via* a servo amplifier 12 and the switch 13, which is normally in the position shown, which actuating device 14 determines the angular position of the mirror 6.

This actuating device 14 may comprise for example a moving-coil drive, a number of filamentary windings being arranged on the mirror and being disposed in a magnetic field, thereby enabling the angular position of the mirror to be varied against a spring force by applying a current to said windings. *Via* the radiation beam A, the measuring detector 11, the servo amplifier 12, the actuating device 14 and the mirror 6 a closed servo-control loop is formed which ensures that the scanning spot S always coincides with the information track.

The housing 3, which contains the optical read unit, can be moved in a radial direction by means of a gear-rack combination 15, which is driven by a motor 16. This motor 16 receives a control signal which is derived from the control signal for the actuating device 14, for example via a low-pass filter 17. Thus, during normal scanning of the record carrier 1 an automatic correction is applied *via* the radial position of the read unit depending on the average deflection of the mirror 6.

The apparatus describes so far is identical to the apparatus described in United States Patent Specification 3,854,015. This Patent Specification also describes some possibilities of obtaining a suitable control signal in the servo control loop by means of the measuring detector 11 and alternative versions of the actuating device 14. Since the manner in which said control signal is obtained is irrelevant to the present invention and a multitude of solutions for this are described in the literature, this subject will not be dealt with in more detail.

In order to enable a desired program section to be located rapidly a switch 18 is arranged between the filter 17 and the motor 16, which switch normally occupies the position shown. During the rapid search for a desired program section this switch 18 is changed over by means of a control unit 19, so that the motor 16 no longer receives a control signal from the filter 17. *Via* the control unit 19 and the switch 18 this motor 16 now receives such a control signal that the read unit is rapidly moved in the desired direction.

In accordance with the invention the apparatus further comprises a control circuit 20, which controls the switch 13. If this switch 13 is in the position shown the servo control loop, which comprises the measuring detector 11, the servo amplifier 12 and deflection element comprising the mirror 6 and the actuating device 14, is closed, which means that the scanning spot S remains centred on the information track.

If a search operation is started *via* the control unit 19, *i.e.* if upon change-over of the switch 18 the read unit 3 is moved rapidly in the radial direction, the servo control loop tends to cancel the radial movement of the scanning spot 5 caused by the movement of the read unit 3 through a gradually increasing deflection of the mirror. Since the control range of this mirror 6 is

obviously limited, this is only possible to a limited extent and soon the instant will be reached at which the radial tracking control is no longer effective and the scanning spot is no longer centred on the information track.

The step in accordance with the invention aims at defining the periods in which said servo control loop is operative and inoperative in a controlled manner. This will be explained with reference to Figure 2, which shows a version of the control circuit 20, and Figure 3, which shows the signals appearing in said control circuit during the various search modes.

The operation of the control circuit 20 will be described for a fast search operation, *i.e.* a search operation in which it is not necessary that the picture reproduction be maintained but for which it is important that the address signals contained in the video signal are read in a reliable manner. In general exactly one video frame, *i.e.* two video fields, is recorded per track circumference on disk-shaped record carriers for which such fast, and if necessary automatic, search operations are required. The address signals, which characterize one video frame, are recorded at least once per video frame, in a vertical flyback period, for example the vertical flyback period, preceding the first field of each video picture. Obviously every vertical flyback period may contain an address signal. With such record carriers, which are of course rotated with a constant speed during reading, the time interval between consecutive field pulses is known, this is also true when the scanning spot is moved rapidly over the tracks in the radial direction during a search operation. For the European television standard this time interval is 20 msec., which will be adopted hereinafter for explaining the invention.

The version of the control circuit 20 used in the apparatus in accordance with the invention as shown in Figure 2 comprises an input terminal 20a, which is connected to the read detector 9 (see Figure 1). The control circuit 20 further comprises a detector 31 for detecting field pulses in the video signal being read. The field pulses detected by the detector 21 are applied to a monostable multivibrator 32, having a relaxation time which is slightly shorter than one field period, for example, 16 msec. Preferably, this monostable multivibrator 32 is not of the retriggerable type, *i.e.* it cannot be retriggered within the relaxation time, for example by a spurious pulse. The non-inverting output of this monostable multivibrator 32 is connected to a divider stage 33 which supplies two signals to two outputs 33a and 33b respectively, which signals have a repetition frequency which is a factor 2^2 and 2^8 respectively lower than the repetition frequency of the field-pulse train. Two input terminals 34b and 34c of a switch 34 are connected to said outputs 33a and 33b, respectively, of said divider stage 33, a third input terminal 34a being connected to the inverting output $\bar{Q}$ of the monostable multivibrator 32. The master contact of said switch 34 is connected to the input of a monostable multivibrator 35 having a relaxation time of approximately 6 msecs. The non-inverting output Q and the inverting output $\bar{Q}$ are connected to two input terminals 36a and 36b, respectively, of a switch 36, whose master contact is connected to the output terminal 20c of the control circuit 20, which output terminal is coupled to the switch 13 for interrupting the servo control loop (see Figure 1). Two switches 34 and 36 are controlled by a circuit 37 having a control input 20b which is connected to the control unit 19 (see Figure 1). Moreover, this circuit 37 supplies a control signal to the monostable multivibrator 35, which signal ensures that this monostable multivibrator 35 is active only during one of the modes described hereinafter.

During a fast search operation in which the picture reproduction is not maintained, the circuit 37 sets the switches 34 and 36 to the positions shown. The signal waveforms appearing in the control circuit during said fast search operation are shown in Figure 3a.

Assuming that the fast search operation is started briefly after the instant T_0, the monostable multivibrator 32 will have been triggered already at this instant by the field pulse r_0 detected at the instant T_0. The inverting output $\bar{Q}$ of said monostable is consequently "0" at the instant T_0 and it returns to a "1" after the relaxation time of approximately 16 msecs at the instant T_1. This rising edge at the instant T_1 triggers the monostable multivibrator 35, so that the inverting output $\bar{Q}$ of this monostable multivibrator becomes "0" from the instant T_1 for a time interval of approximately 6 msecs, until the instant T_3. The output signal of the monostable multivibrator 35 is applied to the switch 13 *via* the output terminal 20c (Figure 1), so that in the time interval T_1—T_3 the servo control loop is closed and the scanning spot follows the information track during these periods.

The relaxation time of the monostable multivibrator 32 has been selected so that the instant T_1 precedes the instant T_2 at which the appearance of the next field pulse r_1 is anticipated, which is 20 msecs. after the appearance of the field pulse r_0. A margin has been adopted in order to ensure that at the instant T_1 the servo control loop will have positioned the scanning spot correctly on the information track, which obviously demands some time after the closure of the servo control loop at the instant T_1. The relaxation time of the monostable multivibrator 35 has been selected in such a manner that the servo control loop remains closed until after the instant at which the address signal recorded in the vertical flyback period associated with the field pulse r_1 may be expected.

Since during the time interval T_1—T_3 the servo control loop is closed and consequently the scanning spot is centred on the information track, it is ensured that the field pulse r_1 and the associated address signal are read correctly. The address signal read provides an indication of the radial distance covered in the time interval T_0—T_1. Thus

by applying this address signal to the control unit 19 (Figure 1) the progress of the search operation can be controlled. Obviously this address signal may also be reproduced.

At the instant T_3 the servo control loop is rendered inoperative. If a deflection element is used which comprises a mirror which is pivotable against spring force from a centre position this deflection element will return to its centre position from this instant.

The field pulse r_1 read at the instant T_2 triggers the monostable 32, which results in the servo control loop being closed again at an instant T_4 preceding the instant at which the next field pulse is expected to appear.

Obviously, the afore-mentioned 6-msec relaxation time of the monostable multivibrator 35 has been determined with a view to the time during which the deflection element can keep the scanning spot centred on the information track for the selected radial speed of the optical read unit. Said time depends on the maximum possible deflection of said deflection element and the radial speed of the optical read unit. If the maximum deflection of the deflection element and said relaxation time have been selected correctly for the maximum possible speed of the read unit, the system will also operate correctly at lower radial speeds of the read unit.

Figure 3b shows the signal waveforms which appear if the apparatus in accordance with the invention is set to the search mode in which the picture reproduction is maintained. During this search operation the optical read unit is moved with a substantially lower radial speed than during the fast search operation as described with reference to Figure 3a. This means that the time intervals in which the servo control loop may be closed are substantially longer, so that the picture reproduction remains possible.

In the control circuit shown in Figure 2 this search mode is started in that the control unit 19 (Figure 1) sets the switch 34 to position 34b and the switch 36 to position 36a *via* the circuit 37.

Reverting now to Figure 3b, it can be seen that a first field pulse r_0 detected just before the start of the search operation, triggers the monostable multivibrator 32. The output Q of this monostable multivibrator is connected to the divider stage 33, which is driven by the negative-going edges of the input signal. In this search mode this divider stage 33 has a divisor of 2^2, so that on its output 33a a signal appears as shown in Figure 3b, which signal has a period corresponding to four field periods. This signal is applied to the monostable multivibrator 35, which is triggered by the positive-going edges of the signal and whose output produced in the non-inverting output 35Q is available on output terminal 20c for controlling the switch 13 in the radial servo-control loop. This output signal 35Q firstly ensures that the servo control loop is rendered inoperative for comparatively short periods, for the first time during the interval T_1—T_3, which interval has a length equal to the relaxation time of the monostable multivibrator 35. The next interval T_3—T_5, in which the servo control loop is closed, *i.e.* is operative, is approximately 4 field periods, during which time interval the video signal is read so that an undisturbed picture reproduction is possible. Since the time interval in which the servo control loop is inoperative substantially coincides in time with a vertical flyback period the disturbances of the picture reproduction, which occurs in this interval, is hardly visible, *i.e.* at the most gives rise to some disturbance in the lower and upper picture lines of a video picture being reproduced.

Figure 2 finally illustrates the possibility of a third scanning mode, the so-called pause mode. In this pause mode the optical read unit is stationary. By means of the control circuit 20 the servo control loop is then alternately rendered operative. Since the read unit is stationary the time interval during which the servo control loop is operative can be substantially longer than in the search modes described in the foregoing. This is achieved by setting the switch 34 to position 34c, so that output 33b of the divider stage 33 is coupled to the monostable 35. The divider stage 33 supplies a signal on said output 33b, which corresponds to its input signal divided by 2^8. As a result of this the servo control loop is alternately rendered inoperative for a time of 6 msec and operative for a time corresponding to 256 field periods. Thus, in this pause mode the same scene of 256 video fields can be reproduced repeatedly. If desired, the picture reproduction during this pause mode may be suppressed. The principal function of this pause mode is to keep the scanning spot positioned on the same part of the record carrier.

It is obvious that some refinements are possible to the system described in the foregoing. For example, in the present embodiment during the search operation with picture reproduction the time interval for which the servo control loop is interrupted is 6 msecs, which is caused by the fact that the control circuit required for this purpose has been derived from the control circuit for the fast search mode with a minimal number of additions. It is obvious that if for specific uses the time interval in which the servo control loop is inoperative must be different, this is possible by the use of an additional monostable multivibrator.

When the servo control loop is switched on again after an inoperative period it is important that the scanning spot is re-centred on the information track as rapidly and as reliably as possible. Possible methods of achieving this are described in the aforementioned United States Patent Specification No. 4,330,880, in particular Figure 5. For the circuit arrangement to be used for this purpose reference is therefore made to said United States Patent Specification, which is herewith incorporated by reference.

Versions of the deflection element to be used in the apparatus in accordance with the invention can be found in United States Patent Specification Re 29963, which is also herewith incorporated by reference.

The manner in which the address signals are

recorded on the record carrier during the vertical flyback periods of the video signal is irrelevant to the present invention. This may for example be done in the same way as in disk-shaped video records suitable for optical reading devices commercially available under the trade mark "Laservision".

In the embodiment of the invention as described herein it is assumed that the control circuit detects field pulses. Instead of said field pulses it is obviously possible to use another synchronizing signal present in the video signal. For example, it is possible to detect the line pulses. By means of a counter it is then possible to derive pulses which are spaced one field period apart. By synchronizing this counter with a field pulse it is thus possible to obtain a pulse train which in fact conicides with the field-pulse train.

Claims

1. Apparatus for reading a disk-shaped record carrier (1) on which video information is recorded in accordance with an optically detectable structure in substantially concentric or signal-shaped tracks, which video information is provided with address signals having predetermined positions with respect to field pulses of the video signal, the apparatus comprising an optical read unit (3) comprising a read detector (9) for detecting the information contained in a read beam after cooperation with a record carrier (1) and a deflection element (14, 6) which co-operates with the read beam to vary the radial scanning position on the record carrier and, in response to a control signal, is movable in two opposite directions relative to a centre position, the apparatus further comprising a drive means (15, 16) for radially moving the optical read unit (3) and a servo control loop for controlling the radial scanning position on the record carrier, which servo control loop includes the deflection element (14, 6) and a measuring detector (11) for measuring the radial deviation of the scanning position relative to the desired track and for deriving therefrom the control signal for the deflection element (14, 6), the servo control loop comprising switching means (13) for rendering said servo control inoperative during controlled time intervals, and an actuating device for causing the deflection element (14, 6) to move at least towards the centre position during said time intervals, characterized in that the apparatus is provided with a control circuit (20) having an input which is coupled to the read detector (8) and an output which is coupled to the switching means (13), which control circuit serves for the detection of field pulses being read or a synchronizing signal in the video signal, which synchronizing signal is time-correlated to said pulses and for supplying a periodic control signal to the switching means (13) for alternately rendering the servo control loop operative and inoperative during a translation of the read unit (3), the phase relation between the control signal and the field pulses being in conformity with the positions of the address signals with respect to the field pulses so as to cause the address signals to be read when the servo loop is operative.

2. An apparatus as claimed in Claim 1, characterized in that the control circuit (20) is adapted to render the servo control loop operative for a time interval which is longer than the time interval comprising the beginning of the field pulse and the end of the address signal contained in the vertical flyback period of the video signal.

3. Apparatus for reading a disk-shaped record carrier (1) on which video information is recorded in accordance with an optically detectable structure in substantially concentric or spiral-shaped tracks, which apparatus comprises an optical read unit (3) comprising a read detector (9) for detecting the information contained in a read beam after cooperation with a record carrier (1) and a deflection element (14, 6) which co-operates with the read beam to vary the radial scanning position on the record carrier (1) and, in response to a control signal, is movable in two opposite directions relative to a centre position, the apparatus further comprising a drive means (15, 16) for radially moving the optical read unit and a servo control loop for controlling the radial scanning position on the record carrier (1), which servo control loop includes the deflection element (14, 6) and a measuring detector (11) for measuring the radial deviation of the scanning position relative to the desired track and for deriving therefrom the control signal for the deflection element (14, 6), the servo control loop comprising switching means (13) for rendering said servo control inoperative during controlled time intervals, and an actuating device for causing the deflection element (14, 6) to move at least towards the centre position during said time intervals, characterized in that the apparatus is provided with a control circuit (20) having an input which is coupled to the read detector (9) and an output which is coupled to the switching means (13), which control circuit serves for the detection of field pulses being read or a synchronizing signal in the video signal, which synchronizing signal is time-correlated to said pulses and for supplying a periodic control signal to the switching means (13) for alternately rendering the servo control loop operative and inoperative during a translation of the read unit (3), the phase of said period control signal having a predetermined relationship with a field pulse which initiates said control signal, the control circuit (20) being adapted to render the servo control loop operative for a time interval which covers a plurality of field periods and to render said servo control loop inoperative in a consecutive time interval whose length of time at least substantially corresponds to one vertical flyback period of the vidoe signal so as to cause the deflection unit to be moved towards the central position when the servo loop is inoperative.

recorded on the record carrier during the vertical flyback periods of the video signal is irrelevant to the present invention. This may for example be done in the same way as in disk-shaped video records suitable for optical reading devices commercially available under the trade mark "Laservision".

In the embodiment of the invention as described herein it is assumed that the control circuit detects field pulses. Instead of said field pulses it is obviously possible to use another synchronizing signal present in the video signal. For example, it is possible to detect the line pulses. By means of a counter it is then possible to derive pulses which are spaced one field period apart. By synchronizing this counter with a field pulse it is thus possible to obtain a pulse train which in fact conicides with the field-pulse train.

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2. An apparatus as claimed in Claim 1, characterized in that the control circuit (20) is adapted to render the servo control loop operative for a time interval which is longer than the time interval comprising the beginning of the field pulse and the end of the address signal contained in the vertical flyback period of the video signal.

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* C L M S *

Patentansprüche

1. Vorrichtung zum Lesen eines scheibenförmigen Aufzeichnungsträgers (1), auf dem Videoinformation entsprechend einer optisch detektierbaren Struktur in im wesentlichen konzentrischen oder signalförmigen Spuren aufgezeichnet ist und diese Videoinformation mit Adressignalen versehen ist, die vorgegebenen Positionen in bezug auf Feldimpulse des Videosignals einnehmen, wobei die Vorrichtung eine optische Leseeinheit (3) enthält, die aus einem Lesedetektor (9) zum Detektieren der in einem Lesestrahl enthaltenen Information nach der Zusammenarbeit mit einem Aufzeichnungsträger (1) und einem Ablenkelement (14, 6) besteht, das mit dem Lesestrahl zum Abändern der radialen Abtastposition auf dem Aufzeichnungsträger zusammenarbeitet, und in Beantwortung eines Steuersignals in zwei entgegengesetzten Richtungen in bezug auf eine zentrale Position bewegbar ist, wobei die Vorrichtung weiter ein Steuermittel (15, 16) zum radialen Verschieben der optischen Leseeinheit (3) und eine Servosteuerschleife zum Steuern der radialen Abtastposition auf dem Aufzeichnungsträger enthält, wobei die Servosteuerschleife das Ablenkelement (14, 6) und einen Messdetektor (11) zum Messen der radialen Abweichung der Abtastposition in bezug auf die gewünschte Spur und zum Ableiten des Steuersignals daraus für das Ablenkelement (14, 6) umfasst, wobei die Servosteuerschleife Schalter (13) zum Ausschalten der Servosteuerung während kontrollierter Zeitintervalle und eine Betätigungseinrichtung zum Bewegen des Ablenkelements (14, 6) wenigstens in die zentrale Position während dieser Zeitintervalle enthält, dadurch gekennzeichnet, dass die Vorrichtung eine Steuerschaltung (20) mit einem Eingang, der an den Lesedetektor (8) angeschlossen ist, und mit einem an den Schalter (13) angeschlossenen Ausgang versehen ist, wobei die Steuerschaltung zum Detektieren von gelesenen Feldimpulsen oder eines Synchronisationssignals im Videosignal dient, wobei das Synchronisationssignal mit diesen Impulsen zeitkorreliert ist, und weiter zum Ausgeben eines periodischen Steuersignals an den Schalter (13) zum abwechselnden Ein- und Ausschalten der Servosteuerschleife während einer seitwärtsen Verlagerung der Leseeinheit (3) vorgesehen ist, wobei das Phasenverhältnis zwischen dem Steuersignal und den Feldimpulsen den Positionen der Adressignale in bezug auf die Feldimpulse zum Einleiten des Lesevorgangs der Adressignale, wenn die Servoschleife im Betrieb ist, entsprechen.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass die Steuerschaltung (20) zum Einschalten der Servosteuerschleife für ein Zeitintervall vorgesehen ist, das länger ist als das Zeitintervall, das den Anfang des Feldimpulses und das Ende des Adressignals im Vertikalrücklauf des Videosignals enthält.

3. Vorrichtung zum Lesen eines scheibenförmigen Aufzeichnungsträgers (1), auf dem Videoinformation entsprechend einer optisch detektierbaren Struktur in im wesentlichen konzentrischen oder spiralförmigen Spuren aufgezeichnet ist, wobei die Vorrichtung eine optische Leseeinheit (3) enthält, die aus einem Lesedetektor (9) zum Detektieren der in einem Lesestrahl nach der Zusammenarbeit mit einem Aufzeichnungsträger (1) und einem Ablenkelement (14, 6) enthaltenen Information enthält, das mit dem Lesestrahl zum Ändern der radialen Abtastposition auf dem Aufzeichnungsträger (1) zusammen arbeitet und in Beantwortung eines Steuersignals in zwei entgegengesetzten Richtungen in bezug auf eine zentrale Position bewegbar ist, wobei die Vorrichtung weiter ein Steuermittel (15, 16) zum radialen Verschieben der optischen Leseeinheit und eine Servosteuerschleife zum Steuern der radialen Abtastposition auf dem Aufzeichnungsträger (1) enthält, wobei die Servosteuerschleife das Ablenkelement (14, 6) und einen Messdetektor (11) zum Messen der radialen Abweichung der Abtastposition in bezug auf die gewünschte Spur und zum Ableiten des Steuersignals daraus für das Ablenkelement (14, 6) enthält, wobei die Servosteuerschleife Schalter (13) zum Abschalten der Servosteuerung während kontrollierter Zeitintervalle und eine Betätigungseinrichtung zum Bewegen des Ablenkelements (14, 6) wenigstens in die zentrale Position während dieser Zeitintervalle enthält, dadurch gekennzeichnet, dass die Vorrichtung mit einer Steuerschaltung (20) mit einem Eingang versehen ist, der an den Lesedetektor (9) angeschlossen ist, und einen Ausgang enthält, der an den Schalter (13) angeschlossen ist, wobei die Steuerschaltung zum Detektieren von gelesenen Feldimpulsen oder eines Synchronisationssignals im Videosignal dient, wobei das Synchronisationssignal zu diesen Impulsen zeitkorreliert ist und zum Ausgeben eines periodischen Steuersignals an den Schalter (13) und zum abwechselnden Ein- oder Ausschalten der Servosteuerschleife bei einer seitwärtsen Verlagerung des Leseeineheit (3) vorgesehen ist, wobei die Phase des periodischen Steuersignals ein vorgegebenes Verhältnis mit einem Feldimpuls besitzt, der das Steuersignal einleitet, wobei die Steuerschaltung (20) zum Einschalten der Servosteuerschleife für ein Zeitintervall, das eine Anzahl von Feldperioden umfasst, und zum Ausschalten der Servosteuerschleife in einem folgenden Zeitintervall vorgesehen ist, dessen zeitliche Länge wenigstens hauptsächlich einen Vertikalrücklauf des Videosignals entspricht, um eine Bewegung des Ablenkeinheits in die zentrale Position zu bewirken, wenn die Servoschleife ausser Betrieb ist.

Revendications

1. Appareil de lecture d'un support d'enregistrement en forme de disque (1) sur lequel de l'information vidéo est enregistrée suivant une structure optiquement détectable dans des pistes sensiblement concentriques ou hélicoïdales, information vidéo comportant des signaux d'adresse ayant des positions prédéterminées par rapport à

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des impulsions de trame de l'information vidéo, appareil qui est muni d'une unité de lecture optique (3) comportant un détecteur de lecture (9) pour détecter l'information contenue dans un faisceau de lecture après coopération avec un support d'enregistrement (1) et d'un élément de déviation (14, 6) qui coopère avec le faisceau de lecture pour changer la position d'exploration radiale sur le support d'enregistrement et qui, en réponse à un signal de commande, peut être déplacé dans deux directions opposées par rapport à une position centrale, appareil qui comporte en outre des moyens d'entraînement (15, 16) pour déplacer l'unité de lecture optique (3) dans le sens radial et une boucle d'asservissement pour commander la position d'exploration radiale sur le support d'enregistrement, boucle d'asservissement qui comprend l'élément de déviation (14, 6) et un détecteur de mesure (11) pour mesurer l'écart radial de la position d'exploration par rapport à la piste désirée et pour déduire de celui-ci le signal de commande pour l'élément de déviation (14, 6), la boucle d'asservissement comportant des moyens de commutation (13) pour rendre ladite boucle d'asservissement inactive pendant des intervalles de temps contrôlés et un dispositif d'actionnement pour déplacer l'élément de déviation (14, 6) au moins vers la position centrale au cours desdits intervalles de temps, caractérisé en ce qu'il comporte un circuit de commande (20) muni d'une entrée couplée au détecteur de lecture (8) et d'une sortie couplée aux moyens de commutation (13), circuit de commande qui sert à détecter des impulsions de trame lues ou un signal de synchronisation, dans le signal vidéo, qui est en corrélation de temps avec ces impulsions, et pour fournir aux moyens de commutation (13) un signal de commande périodique pour rendre la boucle d'asservissement alternativement active et inactive pendant un mouvement de translation de l'unité de lecture (3), la relation de phase entre le signal de commande et les impulsions de trame correspondant aux positions qu'occupent les signaux d'adresse par rapport aux impulsions de trame, de sorte que les signaux d'adresse sont lus lorsque la boucle d'asservissement est active.

2. Appareil selon la revendication 1, caractérisé en ce que le circuit de commande (20) est conçu pour rendre la boucle d'asservissement active durant un intervalle de temps de durée supérieure à celle de l'intervalle de temps comportant le début de l'impulsion de trame et la fin du signal d'adresse contenu dans la période de retour de trame du signal vidéo.

3. Appareil de lecture d'un support d'enregistrement en forme de disque (1) sur lequel de l'information vidéo est enregistrée suivant une structure optiquement détectable dans des pistes sensiblement concentriques ou hélicoïdales, appareil qui comporte une unité de lecture optique (3) comportant un détecteur de lecture (9) pour détecter l'information contenue dans un faisceau de lecture après coopération avec un support d'enregistrement (1) et d'un élément de déviation (14, 6) qui coopère avec le faisceau de lecture pour changer la position d'exploration radiale sur le support d'enregistrement (1) et qui, en réponse à un signal de commande, peut être déplacé dans deux directions opposées par rapport à une position centrale, appareil qui comporte en outre des moyens d'entraînement (15, 16) pour déplacer l'unité de lecture optique dans le sens radial et une boucle d'asservissement pour commander la position d'exploration radiale sur le support d'enregistrement (1), boucle d'asservissement qui comprend l'élément de déviation (14, 6) et un détecteur de mesure (11) pour mesurer l'écart radial de la position d'exploration par rapport à la piste désirée et pour déduire de celui-ci le signal de commande pour l'élément de déviation (14, 6), la boucle d'asservissement comportant des moyens de commutation (13) pour rendre ladite boucle d'asservissement inactive pendant des intervalles de temps contrôlés et un dispositif d'actionnement pour déplacer l'élément de déviation (14, 6) au moins vers la position centrale au cours desdits intervalles de temps, caractérisé en ce qu'il comporte un circuit de commande (20) muni d'une entrée couplée au détecteur de lecture (9) et d'une sortie couplée aux moyens de commutation, circuit de commande qui sert à détecter des impulsions de trame lues ou un signal de synchronisation, dans le signal vidéo, qui est en corrélation de temps avec lesdites impulsions et pour fournir un signal de commande périodique aux moyens de commutation (13) pour rendre la boucle d'asservissement alternativement active et inactive pendant un mouvement de translation de l'unité de lecture (3), la phase dudit signal de commande périodique étant dans un rapport prédéterminé avec une impulsion de trame amorçant ledit signal de commande, alors que le circuit de commande (20) est conçu pour rendre la boucle d'asservissement active au cours d'un intervalle de temps comprenant une pluralité de périodes de trame et pour rendre cette boucle d'asservissement inactive dans un intervalle de temps suivant dont la longueur correspond au moins sensiblement à une période de retour de trame du signal vidéo, de sorte que l'unité de déviation est déplacée vers la position centrale lorsque la boucle d'asservissement est inactive.

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