

Reproduction Device

The invention concerns a reproduction device which reads data from a rotating disk at constant linear velocity.

Such a known reproduction device is the CD player, which plays back a compact disk with constant linear velocity. In the English language such a system is referred to as constant linear velocity system. The usual abbreviation for this is CLV system. In contrast to this, in an analog record player - a constant angular system - the angular velocity of the disk remains constant. The abbreviation CAV system is frequently used for this system.

According to the standard, a compact disk may be recorded by the manufacturer with a speed between 1.2 m/s and 1.4 m/s. Therefore, the track-scanning speed upon playback of a compact disk in a CD player must match its recording speed. If the compact disk was recorded at a speed of, for example, 1.2 m/s, then it must also be played back at the same speed, i.e. 1.2 m/s. However, as the recording speed may lie between 1.2 m/s and 1.4 m/s, every compact disk has its own track-scanning speed specific to the disk, for example, 1.2 m/s or 1.3 m/s or 1.4 m/s.

If, for example, a piece of music which lasts one hour is recorded on a compact disk, the pit length is longer in the case of a higher recording speed than it is in the case of a lower recording speed. Therefore, the track length and hence the number of data tracks too, is greater if the piece of music has been recorded at a speed of, for example, 1.4 m/s, than it would be if recorded at, for example, a speed of only 1.2 m/s.

The track-scanning speed in a CD player is derived from the HF signal which is scanned by a light beam from the compact disk. The audio signal and a synchronizing signal are obtained from the HF signal in a decoder; said synchronizing signal regulates the disk drive so that it keeps to exactly the correct rotational speed. Therefore, in a CD player, each compact disk rotates at the track-scanning speed specific to the disk. The bit rate of the bits read out is kept constant. However, it is not known how high the track-scanning speed specific to the disk really is.

But in order to be able to calculate accurately the number of tracks which must be passed over in order to find a desired point on the disk, for example, a desired piece of music, it is not sufficient just to know that the track-scanning speed lies between 1.2 m/s and 1.4 m/s. The more accurate the information on the track-scanning speed specific to the disk is, the more accurate the calculation for the number of tracks. Otherwise, an average value for the track-scanning speed specific to the disk must be used as a basis.

A CD player is known from EP-PS 0 214 256 which determines the track-scanning speed specific to the disk by obtaining the rotational speed of the disk from the filtered frequency of a focusing error signal.

A disadvantage with known CD players which determine the track-scanning speed specific to the disk, lies in the fact that the speed must be determined for every disk inserted. This procedure takes time, but the user wants the disk to be played back as soon as possible after inserting it.

It is, therefore, the object of the invention to shorten the time span between inserting the disk into a CD player and playing it back.

The invention solves this task in that a memory is provided in the reproduction device in order to be able to store the specific track-scanning speed for several disks.

The measure of storing the disk-specific track-scanning speed for several disks means that the track-scanning speed specific to a disk no longer has to be redetermined when a disk which has already been played back is reinserted into the CD player in order to be played back again. Hence, the time between insertion and playback of the disk is shortened considerably.

The individual disks can be identified, for example, by the coded catalog numbers contained in the subcode of the disk, or by individual characteristic features of the subcode.

In the case of a cartridge player it is possible to allocate the disks unambiguously to a cartridge and to store the track-scanning speed specific to a disk in order according to disks and cartridges.

A first embodiment example of the invention is shown in Figure 1; said embodiment example will now be explained.

The compact disk CD is scanned by an optical scanning device A which supplies data to a data-processing circuit D. The data-processing circuit D is connected to the input of an identification circuit I which evaluates the subcode of the disk CD which has been inserted. A comparison device V checks whether the track-scanning speed specific to the disk is already stored in a memory S for the subcode being received. If this is the case, the stored track-scanning speed specific to the disk is read out from the memory S and made available to the servo circuits SV of the CD player. If the track-scanning speed specific to the disk has not yet

been stored, it is first determined, for example, according to the method described in EP-PS 0 214 256, and subsequently stored in the memory S.

In a further embodiment example of the invention, the user is provided the option of deleting the data in the memory S.

The invention is suitable for reproduction devices referred to as CLV systems because they scan a disk with constant linear velocity. Examples of this are CD players, video disk players, DRAW disk players and magneto-optical recording and playback devices.



Patent Claims

1. Reproduction device which reads data from a rotating disk (CD) at constant linear velocity and is equipped with means in order to determine the track-scanning speed specific to the disk, characterized in that a memory (S) is provided in the reproduction device in order to be able to store the specific track-scanning speed for several disks.
2. Reproduction device according to claim 1, characterized in that the user has the option of deleting the contents of the memory (S).
3. Reproduction device according to claim 1 or 2, characterized in that it is a CD player.
4. Reproduction device according to claim 1, 2 or 3, characterized in that it is a cartridge device in which the track-scanning speed specific to a disk can be stored in the memory (S) in order according to disks and cartridges.
5. Reproduction device according to claim 1, 2, 3 or 4, characterized in that a scanning device (A), which reads the data from a disk (CD), is connected to a data-processing circuit (D), the output of which is connected to the input of an identification circuit (I) for identifying the disk (CD), that the output of the identification circuit (I) is connected to a comparison circuit (V) which is connected to the memory (S), that the identification circuit (I) is also



connected to a device for determining the track
-scanning speed specific to the disk, and that said
device for determining the track-scanning speed
specific to the disk is also connected to the memory .
(S) .