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(54) **Video record for use with computer controlled player/monitor systems**

(57) An encoder (10) under the control of the computer (11) is connected into a video input circuit (12) of a video recorder (13). During certain lines of the field blanking interval, this unit generates a signal which corresponds with the program and data being recorded on a video disk or tape recording means. The resulting video recording (16) has both audio/visual material recorded thereon and also control information. During playback of the video material it is possible for the controlling computer (17) to display (19) either the audio visual information recorded on the tape or computer produced material generated from the computer instructions recorded in the field blanking interval. A switch (18) responds to signals from the computer generated upon the detection of control information by decoder (15).
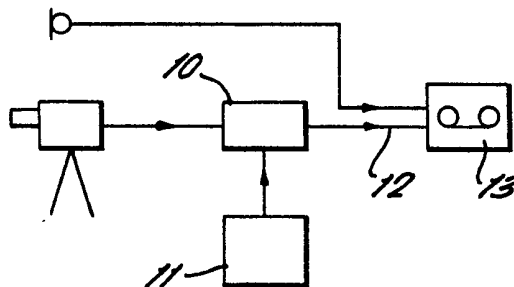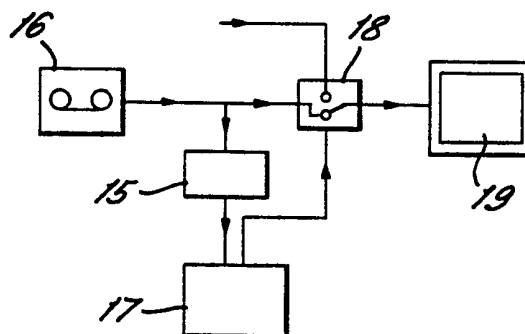
FIG. 1.

FIG. 2.

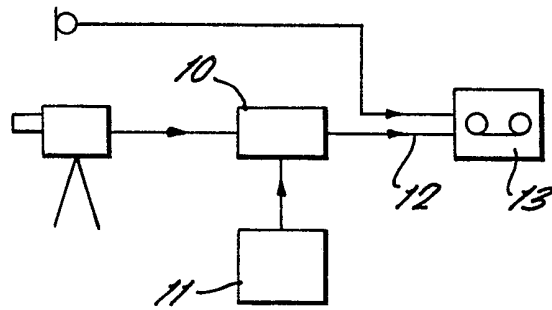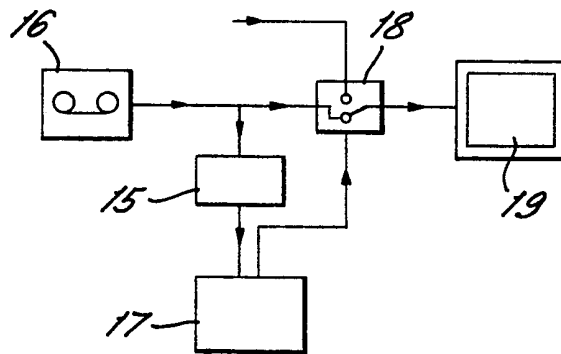GB 2 167 917 A

FIG. 1.

FIG. 2.

SPECIFICATION

Video recordings for use with computer controlled player/monitor systems

This invention relates to video recordings for use with computer controlled player/monitor systems.

Video players and recorders increasingly are being used in conjunction with computers. Typically the computer is used to control the operation of the video player or recorder.

In order for any computer to operate it must be provided with program and data. When being used to control a video player or recorder the computer must be loaded with specific program and data which correspond with the audio and video material. The loading of such program and data usually requires the use of a separate recording medium (such as a magnetic disk or tape) and a suitable reproduction device.

The invention provides a video record for use in a computer controlled video player/-monitor system, said record having audio/visual material recorded thereon and also control information for controlling operation of the computer in selecting computer produced material and/or material from the recording for reproduction by the monitor system.

Thus with this invention, it is possible for a computer to recover such program or data from the video record or player in such a way that the latter's capability to play back audio and video material is unaffected. The invention does not depend upon the physical nature of the medium used by the video or recorded (such as video tape or video disk), the recording format (such as VHS, BETAMAX, CED, VHD) or the video standard (such as PAL, SECAM NTSC).

The program and data to be loaded into the computer are recorded in, and subsequently reproduced from, some of the television picture lines making up the field blanking interval. These lines are not displayed on the screen of a correctly adjusted television set or monitor because they occur at the time the set is preparing to draw the next field on the screen.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is a block diagram of the configuration used during recording;

Figure 2 is a block diagram of the configuration used during play back.

Referring to Fig. 1, during recording an encoder 10, under the control of a computer 11, is connected into the video input circuit 12 of a video recorder 13. During certain lines of the field blanking interval this unit generates a signal which corresponds with the program and data being recorded on a video disc or tape recording medium. At all other times the

encoder passes the video source signal unchanged.

The form of the encoded signal must be suitable for the recorder. This is accomplished by keeping it within the bandwidth assigned to the luminance information of a normal video picture. Any of the standard ways of encoding digital information for analogue transmission may be used, providing this bandwidth constraint is met. One possibility is to represent each binary 0 by one cycle of a 0.5MHz sine wave and each binary 1 by two cycles of a 1MHz sine wave. This particular encoding technique allows one or more bytes (or groups of 8 bits) to be transmitted within each of the field blanking lines used. By using 8 of the available lines within each field it is possible to encode 8 such bytes per field or 400 per second (assuming a 50Hz field frequency).

During parts of the video material where no picture is required (perhaps during a natural break between video sequences) it is possible to increase radically this data rate by using all the lines of the picture, not just the field blanking lines.

A particular implementation of the invention is to use lines 12–17 of each field to hold information. Each line holds one byte recorded in the way described at the top of page three. The six bytes recorded in each field are 1) a "type" code, 2 & 3) a time tag, 4) a page number 5 & 6) a checksum. This allows each picture field to contain time information. The program is loaded into the computer from fields in which lines 12–275 carry data, viz. there is no picture. In these fields the first six bytes are in the same format except that a different value in the "type" byte informs the computer that 256 bytes of program follow the checksum. The 256 bytes of data are followed in turn by another checksum. The computer uses the "page number" field to determine where in its memory the program is to be loaded.

Referring to Fig. 2, the reproduction configuration requires that a decoder 15 be connected to the video output of the player or recorder 16. This decoder responds to the information recorded within the video signal on the tape or disc and presents it to the computer 17 which typically stores it in its memory. In some applications it may be appropriate to add a switch 18 to allow the computer to control exactly what is displayed on the monitor 19.

Because information may be read continuously by the computer, even whilst audio and video are being played back, the information can be used to determine the current location within the medium. For example it is possible to record the number of current field relative to the start of a video tape. such information can be used by a computer to provide random access to a video tape.

CLAIMS
1. A video recording for use in a computer controlled video player/monitor system, said
5 recording having audio/visual material recorded thereon and also control information for controlling operation of the computer in selecting computer produced material and/or material from the recording for reproduction by the
10 monitor system.
2. A recording as claimed in claim 1 wherein at least certain of the control information is recorded within field blanking intervals between successive individual picture fields on
15 the recording.
3. A recording as claimed in claim 1 or claim 2 wherein certain of said control information is recorded between parts of the audio/visual recording where no audio/visual re-
20 cording is required.
4. A recording as claimed in any of claims 1 to 3 wherein the control information includes information for co-ordinating operation of the video player with operation of the com-
25 puter to merge material from the computer with material from the video player for display on the television screen.
5. A recording as claimed in any of the preceding claims wherein the control informa-
30 tion on the recording include sequential designations of the fields on the record to enable random access to a requisite field or fields.
6. A recording as claimed in any of the preceding claims in the form of a video disc.
35 7. A recording as claimed in any of the preceding claims in the form of a video tape.
8. A video recording substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.