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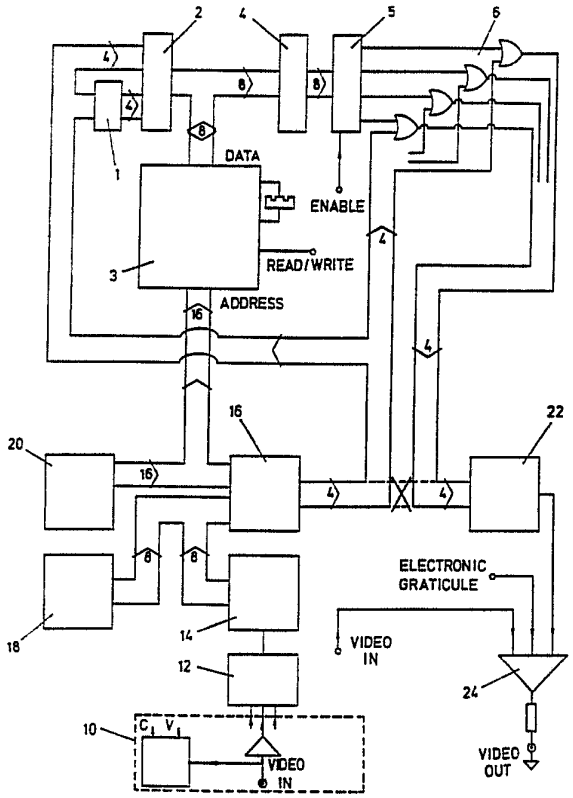
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(54) Title: VIDEO WAVEFORM STORING SYSTEM

(57) Abstract

A video waveform storing system comprises an input for receiving a video signal, means (10, 12, 14) for processing the video signal and deriving therefrom video and/or vector waveform signals, a store (3) for storing the derived waveform signals for an indefinite time, and means (4, 5, 6) for subsequently reading the waveform signals from the store (3) to form corresponding waveform displays. The system can display waveforms being derived in real time to compare with stored waveforms.



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Video Waveform Storing System

This invention relates to a storing system for video waveforms.

British Patent No. 2 183 429 describes a monitoring system which comprises an input for receiving a video signal, means for processing the video signal and deriving therefrom video and/or vector waveform signals, and means for applying the video and vector waveform signals to an output for displaying the video and/or vector waveforms on a display. The video and.or vector waveform signals are combined with the received video signal for application to the display, so that these waveforms are displayed at the same time as the picture itself. The system enables the user to monitor the picture and its corresponding video and/or vector waveforms in real time on the one display, and determine if any adjustments are necessary to improve the quality of the video signal being received.

It is common for the video signals produced by different video cameras to differ from each other e.g. in respect of colour balance, so that the cameras need adjustment to agree with each other before they are used together. Also any given video camera may require re-adjustment in the course of time, in order to maintain the parameters of its output video signal.

We have now devised a system which enables the parameters of different video signals (e.g. from different camera or from the same camera but at different times) to be compared with each other, so that any adjustments can be made if desired.

In accordance with this invention, there is provided a video waveform storing system, comprising an input for receiving a video signal, means for processing the video signal and deriving therefrom video and/or vector waveform signals, a store for storing the derived waveform signals for an indefinite time and means for subsequently reading the waveform signals from the store for display.

This system is preferably combined with a system as described in British patent no. 2 183 420, so that video and/or vector waveforms being derived in real time from a received

video and/or vector waveforms, i.e. waveforms which have previously been written into the store.

An embodiment of this invention will now be described by way of example only and with reference to the accompanying drawings, the single figure of which is a block diagram of a system in accordance with this invention.

The system which is shown in the drawing comprises a circuit 10 which receives a video input signal and derives video and vector waveform signals therefrom on a real time basis, as described in British patent 2 183 420. The waveform signals are sampled sequentially by a switch 12 and passed to an analog-to-digital converter 14, the output of which is written into a memory 16 under the control of a write address counter 18. The waveform signals are read out of memory 16 under control of a read-address counter 20; in accordance with British patent 2 183 420 the waveform signals read out of memory 16 would be converted to analog by digital-to-analog converter 22, then superimposed on the input video signal at 24, for application to a display so that the video picture would have superimposed thereon corresponding video and vector waveform displays on a real time basis. Instead however, the direct connection from the memory 16 to the digital-to-analog converter 22 is interrupted, and are parallel lines from the memory 16 are connected to respective OR gates 6 which are in turn connected to the converter 22.

Furthermore, the data read out from the memory 16 is written into a store 3 via two 4-to-8 bit latches 1, 2 and under the control of the address counter 20. Store 3 is a non-volatile RAM, for example a 32K X 8 memory with battery back-up. The information stored in store 3 is for one television field and corresponds to the video and/or vector waveforms being displayed at that time on the display to which the system output is connected.

For reading information from the store 3, the data is latched at 4, converted from 8 to 4 bits at 5 and applied to the OR gates 6 for display via the digital-to-analog converter 32 and system output. The stored information can be blanked out by disabling the 8-to-4 converter 5. However, a received video signal may be connected to the system input, so that its

video and vector waveforms are derived in real time and delivered from memory 16 for superimposing on the video signal at 24 and display, whilst at the same time the historical video and vector waveforms stored in store 3 are also superimposed at 24 for display at the same time. In this manner, the video and vector waveforms of the video signal being currently received can be compared with the historical waveforms stored in store 3.

The system may be arranged so that the stored waveforms are displayed in a different colour (e.g. magenta) from the current waveforms (typically green).

The store 3 may be of sufficient capacity to store a number of different waveforms. These may include one or more factory-set waveforms (i.e. ideal or optimum waveforms) with write-protection.

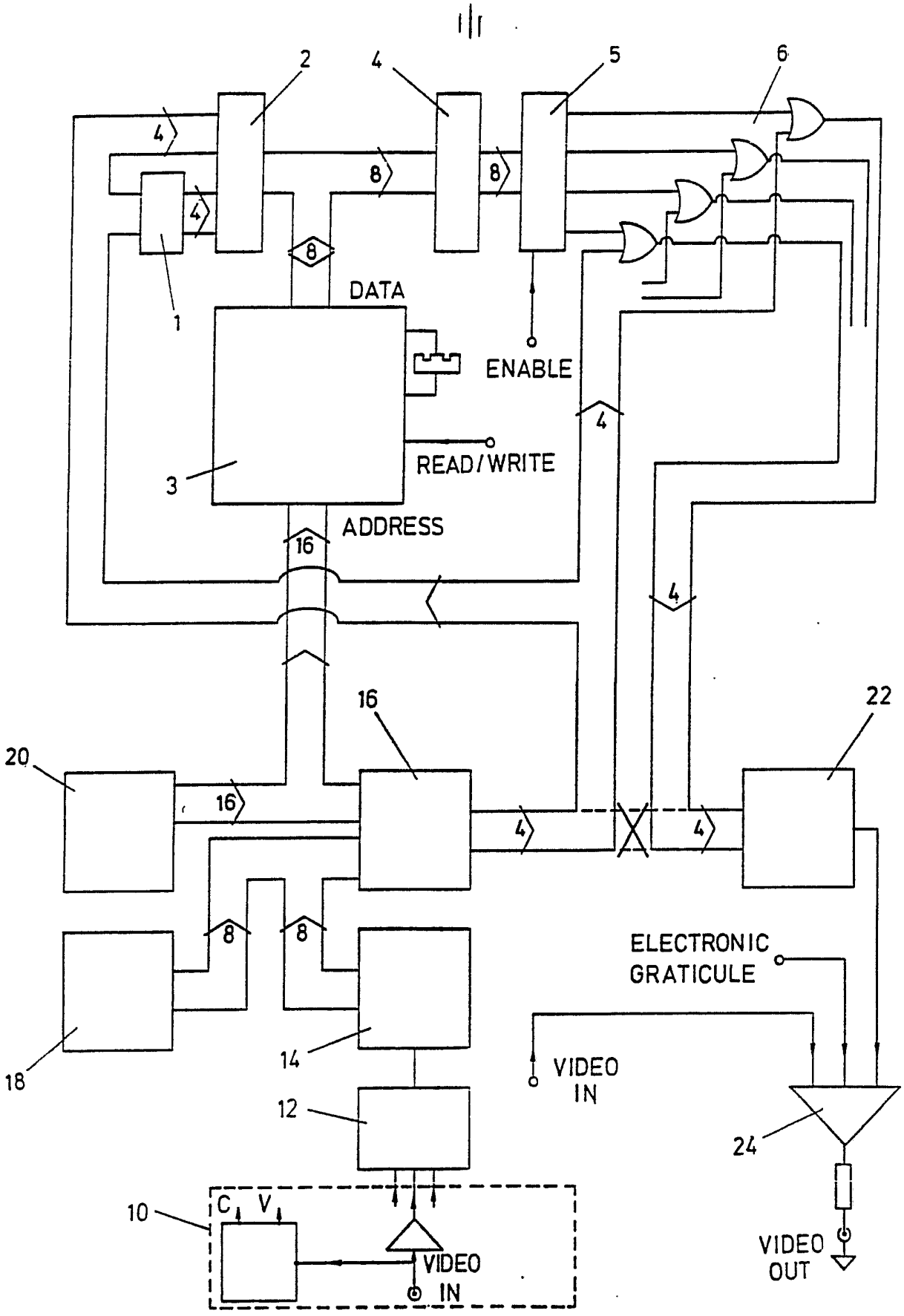
The adding circuit 24 further includes an input from a circuit which generates signals to display a graticule against which the waveforms can be observed.

Claims

1) A video waveform storing system, comprising an input for receiving a video signal, means for processing the video signal and deriving therefrom video and/or vector waveform signals, a store for storing the derived waveform signals for an indefinite time, and means for subsequently reading the waveform signals from the store for display.

2) A video waveform storing system as claimed in claim 1, in which the processing means includes a memory into which the waveform signals are written and from which they are read on a real time basis, said store being arranged to store waveform signal which are read from memory.

3) A video waveform storing system as claimed in claim 2, arranged for the waveform signals read from the memory in real time to be passed to a display simultaneously with waveform signals read from said store.


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INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 91/01787

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 H04N17/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	H04N ; G06F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
Y	FERNSEH- UND KINO-TECHNIK vol. 44, no. 5, May 1990, HEIDELBERG,DE pages 229 - 232; N. ATREYA: 'NEUARTIGER PAL-VIDEO-SIGNALANALYSATOR' see abstract see page 231, left column, line 3-7; figure 10	1-2
A		3

Y	PATENT ABSTRACTS OF JAPAN vol. 7, no. 243 (E-207)28 October 1983 & JP,A,58 131 864 (MATSUSHITA) 5 August 1983 see abstract	1-2

A	US,A,4 740 841 (SLAVIN) 26 April 1988 see column 1, line 61 - column 2, line 14; figure 1	1-2

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° Special categories of cited documents :[10]

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
14 JANUARY 1992	24.01.92
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	SCHINNERL A.

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category °	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	GB,A,2 183 420 (NUNNEY) 3 June 1987 cited in the application see abstract; claims; figure 1 ---	1-3
A	GB,A,2 183 429 (CANON) 3 June 1987 cited in the application see abstract; figure 1 ---	1-2

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. GB 9101787 SA 52056

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-4740841	26-04-88	CA-A- 1276718	20-11-90
		EP-A- 0283997	28-09-88
		JP-A- 63260391	27-10-88
GB-A-2183420	03-06-87	None	
GB-A-2183429	03-06-87	JP-A- 62082484	15-04-87
		DE-A,C 3634024	16-04-87
		FR-A- 2588399	10-04-87

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