Description

The invention relates to a video system comprising a video signal generating device and at least one video signal receiving device and a signal bus, the video signal generating device having a video signal output for producing a video signal and the video signal receiving device having a video signal input for receiving the video signal, whilst the video signal input can be coupled to the video signal output of the video signal generating device over the signal bus.

The invention likewise relates to a video signal generating device and a video signal receiving device to be used in the video system.

A video system of the type set forth in the preamble is known, for example, from Funk-Technik 38 (1983), Vol. 5, pp. 208-212. For example, the video signal generating device can be a video tuner and the video signal receiving device can then be a television picture screen on which the video signal produced by the tuner can be displayed, or a video recorder on which the video signal produced by the tuner can be recorded. Another possibility is that the video recorder is the video signal generating device. The signal reproduced by the video recorder can now be applied over the signal bus to the television screen for visualizing the video signal. It may be evident that the system may optionally include one or a plurality of receiving devices. Furthermore, the system may optionally include one or a plurality of video signal generating devices. However, the invention describes the cooperation of a video signal generating device with one or a plurality of video signal receiving device. These devices can be coupled to each other over a signal bus, for example, the SCART bus as described in aforementioned publication.

It is an object of the invention to provide a video system that has great user-friendliness and provides more options within the scope of future developments of video systems.

For this purpose, the video system according to the invention is characterised in that the video signal generating device is capable of generating a video signal according to a number of x video signal formats from a number of y video signal formats, in that the video signal receiving device is suitable for receiving and processing a video signal according to a number of z video signal formats from the number of y video signal formats, in that for y it holds that $y > 1$, and for x and z it holds that $1 \leqq x \leqq y$ and $1 \leqq z \leqq y$, in that the video signal generating device comprises a control signal generator for generating a first control signal for each of the x video signal formats and/or for generating a second control signal for each of the y-x remaining video signal formats and for delivering the x first and/or y-x second control signals at a control signal output of the video signal generating device, in that the video signal receiving device comprises a control signal generator for generating the first control signal for each of the z video signal formats and/or for generating the second control signal for each of the y-z remaining video signal formats and for producing the z first and/or y-z second control signals at a control signal output of the video signal receiving device, in that the control signal outputs of the video signal generating device and the video signal receiving device can be coupled to each other over the signal bus, in that the video system comprises a detector unit arranged for establishing, in response to the first and/or second control signals, the p video signal formats common to the various devices from the y video signal formats, in that the detector unit thereto has an input coupled to the control signal output of a device and has an output for producing for $p = 1$ a detector signal characteristic of the common video signal format and for producing for $p \geqq 2$ a detector signal that is characteristic of one of the p common video signal formats, for applying the detector signal to the devices, in that the video signal generating device is arranged for producing a video signal at its video signal output according to the common video signal format established by the detector unit in response to the detector signal, and in that the video signal receiving device is arranged for adjusting the receiving device in response to the detector signal so that the video signal can be processed by the receiving device according to the video signal format determined by the detector unit.

The invention is based on the following understanding. Future video signal generating devices will be able more and more often to generate video signals according to more than one video signal format. With video signal formats one may think of, for example, the CVBS (chroma-video-blanking-sync) signal, that is to say, a signal comprising both the chrominance and the luminance component of the video signal in a combined form; the Y/C signal, in which the chrominance and luminance components are presented separately; the Y-U-V or the R-G-B signal; or the MAC signal. Also future video signal receiving devices will be able more often to process video signals according to more than one video signal format.

It is an object of the invention to provide a method of making a correct choice as to the cooperation of a video signal generating device with one or more video signal receiving devices in a video system with respect to the video signal format to be generated by the video signal generating device.

Since the various devices are able to indicate by means of the control signals which video signal formats they can handle and/or which video signal formats they cannot handle, the system is able to make a choice. The system thereto chooses a video signal format held in common at any rate by the devices then activated.

It is possible for the detector unit to establish that

at least two video signal formats are common to the activated devices. In that case one video signal format is to be selected by the detector unit. For example, if there are two common video signal formats of which one for-at has a greater video signal quality (for example MAC) than the other format (for example CVBS), the detector unit can detect the video signal format having the higher video signal quality (MAC). If the devices have two equivalent video signal formats in common, for example YU-V and R-G-B, the detector unit can be predetermined to select, for example, the Y-U-V format.

Basically, a single detector unit included in one of the devices will suffice. In that case the output of the detector unit is coupled to a detector signal output of this device and the other device(s) has (have each) a detector signal input which may be coupled over the signal bus to the detector signal output of said one device.

The video signal generating device and at least one video signal receiving device can also comprise each a detector belonging to the detector unit arranged for establishing the p common video signal formats and for generating the detector signal, in that the detectors thereto have each an input coupled to the control signal output of the associated device and an output for producing for $p = 1$ the detector signal that is characteristic of the common signal format and for producing for $p \geq 2$ the detector signal that is characteristic of one and the same video signal format of the p common video signal, in that the video signal generating device is arranged for producing a video signal at its video signal output in response to the detector signal of the associated detector according to the common video signal format selected by this detector, and in that the video signal receiving device is arranged for adjusting the receiving device in response to the detector signal of the associated detector in such a way that the video signal applied to its video signal input can be processed.

The control signal outputs of the devices have each y sub-outputs, whilst each of the y control signal sub-outputs of a device corresponds to one of the y video signal formats, in that each of the y control signal sub-outputs of a device can be coupled to a corresponding sub-output of the y control signal sub-outputs of the other devices over an associated signal line in the signal bus, and in that the control signal generator in a device has y outputs, each of the y outputs being coupled to an associated control signal sub-output of the device, in that the control signal generator in the video signal generating device is arranged for producing the first control signal at the x outputs corresponding to the x video signal formats and/or for producing the second control signal at the y-x remaining outputs, and in that the control signal generator in the video signal generating device is arranged for producing the first control signal at the z outputs corresponding to the z video signal formats and/or for producing the second control signal at the y-z remaining outputs. However, it is likewise possible to use only a single line in the line bus for control signal transmission. In that case the control signal generator in the video signal generating device is arranged for serially generating in a specific fixed order for the y video signal formats the x first control signals for each of the x video signal formats and/or for serially generating the y-x second control signals for each of the y-x remaining video signal formats, in that the control signal generator in the video signal receiving device is arranged for serially generating in the saame order for the y video signal formats the z first control signals for each of the z video signal formats and/or for serially generating the y-z second control signals for each of the yz remaining video signal formats, and in that an output of a control signal generator is coupled to the control signal output of the associated device. Since the number of y video signal formats is fixed, it could be sufficient to allow each device to generate a first control signal for those video signal formats for which the device itself can suitably be used. Another possibility is to allow the device to generate only a second control signal for those signal formats for which the device cannot suitably be used.

Alternatively, it is possible for the devices to generate both the first and the second control signals.

Yet another possibility is, for example, that only the video signal generating device generates both the first and the second control signals for those video signal formats for which this generating device is suitable or unsuitable respectively. The receiving devices can then generate, for example, only the second control signals. If these second control signals are dominant (that is to say, if a first control signal is applied by a first device and a second control signal is applied by a second device to one and the same line in the signal bus, the second control signal will appear on this line) it will only be necessary to detect for which video signal formats a first auxiliary signal is still present on the line.

The invention will be further explained with reference to a number of exemplary embodiments in the following descriptions, in which:

Fig. 1 shows a first exemplary embodiment,

Fig. 2 shows a second exemplary embodiment,

Fig. 3 shows the serial data stream for the control signals in the exemplary embodiment of Fig. 2,

Fig. 4 shows an example of a control signal generator,

Fig. 5 shows another example of a control signal generator,

Figs. 6, 7 and 8 show Tables clarifying the selection of a specific signal format based on the control signals for three devices,

Figs. 9a and 9b show two different exemplary

embodiments of the control signal generator and Fig. 10 shows an exemplary embodiment of a video signal generating device.

Fig. 1 shows a video system comprising a video signal generating device 1, a video signal receiving device 2, a video signal receiving device 3 and a signal bus 4. The video signal generating device 1 is arranged for generating a video signal according to the CVBS format, a video signal according to the Y/C format and a video signal according to the MAC baseband format. The MAC baseband format is described, for example, in Funkschau 18/1985, pp. 59-63, more specifically, Fig. 1.

It should be observed in this respect that the video signals are derived (may be derived) from the same picture signal so that in fact the same video signal is concerned which can be generated in the three formats described. In addition, if a video signal according to the Y/C format is concerned, it is a matter of two separate signals, that is to say, the luminance signal y and the chrominance signal C. These signals are in fact to be transported over two separate lines.

The video signal generating device comprises three video signal sources 5, 6 and 7 for generating the video signals according to the above three formats CVBS, Y/C and MAC baseband respectively. Outputs of these sources are coupled to associated terminals 8, 9 and 10 respectively, of controllable switching means in the form of a three-state switch 12. A terminal 11 of this switch 12 is coupled to the video signal output 13 of the device 1. Since the signal source 6 ought to have two outputs, the switch 12 actually ought to look differently and video signal output 13 of device 1 actually ought to be constituted by two outputs. However, the diagrammatic representation as shown in Fig. 1 will suffice for the explanation.

The device 1 comprises a control signal generator 14 having four outputs coupled to four sub-outputs 15.1, 15.2, 15.3 and 15.4 of a control signal output 15 of the device 1.

Device 2 comprises three video signal processing units 16, 17 and 18 arranged for processing a video signal according to the following respective formats: CVBS, Y/C and RGB. The inputs to the units 16, 17 and 18 are coupled to the terminals 19, 20 and 21 respectively, of controllable switching means constituted by a three-state switch 22. The terminal 23 of this switch 22 is coupled to the video signal input 24 of the device 2. The device 2 comprises a control signal generator 25 whose four outputs are coupled to sub-outputs 26.1, 26.2, 26.3 and 26.4 of a control signal output 26.

Needless to observe that what has been stated with respect to the video signal source 6 in device 1 holds in like manner for the video signal processing units 17 and 18. The unit 17 actually has two inputs for receiving the two components Y and C and the unit 18 has three inputs for receiving the three colour components red, green and blue. This means that the video signal input 24 actually comprises three terminals. The three-state switch 22 therefore shows only diagrammatically the operation of the device. However, this will be sufficient for a proper understanding.

Device 3 comprises two video signal processing units 27 and 28 for processing a CVBS or a MAC baseband signal respectively. The inputs to these units 27 and 28 are coupled to terminals 29 and 30 respectively, of controllable switching means constituted by a two-state switch 31. One terminal 32 of this switch 31 is coupled to the video signal input 33 of device 3. A control signal generator 34 again has four outputs coupled to sub-outputs 35.1, 35.2, 35.3 and 35.4 of a control signal output 35 of device 3.

The video system further includes a detector unit 36 shared by the entire system, but included in device 1. The detector unit 36 has four inputs 37.1, 37.2, 37.3 and 37.4 coupled to the control signal sub-outputs 15.1 to 15.4, and has an output 38. This output is coupled to the control signal input of switch 12 and to detector signal output 39 of device 1.

The devices 2 and 3 have each a detector signal input 40 or 41 respectively. The detector signal input 40 is coupled to a control signal input of switch 22 and the detector signal input 41 is coupled to a control signal input of switch 31.

The signal bus 4 comprises four lines for conveying the control signals between the various devices. For this purpose, the terminals 15.1, 26.1 and 35.1 are coupled to each other over line 42.1. So are the terminals 15.2, 26.2 and 35.2 through line 42.2. The terminals 15.3, 26.3 and 35.3 are coupled to each other over line 42.3 and terminals 15.4, 26.4 and 35.4 are coupled to each other over line 42.4. The detector signal of the detector 36 presented at output 39 is applied to the detector signal inputs 40 and 41 of the respective devices 2 and 3 over line 42.5 in the signal bus 4.

The video signal output 13 of device 1 is coupled to the video signal inputs 24 and 33 of the devices 2 and 3 over line 42.6 in the signal bus 4. The aforementioned may have distinctly shown that the line 42.6 in fact is to comprise no less than three separate signal conductors for transmitting the RGB signal. If a Y/C video signal is transmitted, two of these three signal conductors can be used and if the transmitted video signal is a CVBS or a MAC baseband signal no more than one of the three signal lines is used. If the SCART cable known per se were used for a signal bus, the distribution of the various video signal components over the various lines in the SCART cable would be different. The SCART cable comprises three separate lines for the three colour components red, green and blue. The SCART cable further includes a separate line for the CVBS video signal. However, if a Y/C video signal is transmitted through a SCART cable, the Y component will be conveyed

over the CVBS line and the C component over one of the three lines for the RGB signal.

The control signal generator 14 delivers at the outputs 43.1, 43.2 and 43.4 a first control signal in the form of a voltage of V volts. V is unequal to O and has a value of, for example, 10 volts. The voltage of V volts at the output 43.1 denotes that the device 1 is able to generate a CVBS video signal. The voltage of V volts at the output 43.2 denotes that the device 1 is able to generate a video signal according to the Y/C format. The voltage of V volts at the output 43.4 denotes that the device 1 is able to generate a MAC baseband signal. The output 43.3 in the generator 14 is connected to earth. This means that there is a second control signal in the form of a zero voltage at the output 43.3 which means that the device 1 is unable to generate a RGB video signal.

The control signal generator 25 delivers a first control signal in the form of a voltage of V volts at the outputs 44.1, 44.2 and 44.3, which denotes that the device is able to process a video signal according to the CVBS, Y/C and RGB formats. The device is unable to process a MAC baseband signal. Therefore, the generator 25 produces a zero voltage at the output 44.4.

Since the device 3 is only capable of processing a CVBS and a MAC baseband signal, the outputs 45.1 and 45.4 carry a voltage of V volts and the outputs 45.2 and 45.3 a zero voltage. Due to the zero voltage at the output 44.4, a zero voltage will also occur on the line 42.4 in the signal bus 4. A zero voltage will also occur on the lines 42.2 and 42.3 in the signal bus due to the zero voltage on the outputs 45.2 and 45.3. Only line 42.1 will carry a voltage of V volts.

The detector 36 detects that there is a high voltage only on input 37.1. Thus, the detector 36 knows that the three devices have the CVBS video signal format in co-mon. The detector 36 produces at its output 38 a detector signal so that in response to this detector signal switch 12 switches to the state in which terminals 8 and 11 are coupled to each other. As this detector signal is also applied to the switches 22 and 31 in the devices 2 and 3 over line 42.5 in the signal bus 4, this detector signal also provides that the switch 22 is moved to the state in which the terminals 19 and 23 are coupled to each other and provides that switch 31 is moved to the state in which terminals 29 and 31 are coupled to each other.

A CVBS video signal is now presented at output 13 by the device 1 and applied to the inputs 24 and 33 of the respective devices 2 and 3 over line 42.6 in the signal bus 4. In these devices 2 and 3 the video signal is applied to the CVBS video signal processing units 16 and 27 respectively, in which the CVBS video signal can be processed. The device 2 may be a video recorder in which the video signal is recorded on a magnetic record carrier. The device 3 may be a picture screen on which the video signal is displayed as a picture signal.

Let us assume that the device 3 is switched off. Switching off this device means that the outputs 45.1 to 45.4 of the control signal generator 34 become non-earthed. This means that these outputs are disconnected from the +V voltage and from earth when the switches (not shown) in the control signal generator 34 are opened. Consequently, the two lines 42.1 and 42.2 reach a voltage of +V volts. The detector 36 now detects that the devices 1 and 2 have the video signal formats CVBS and YIC in common. The detector 36 may now choose the format having the higher picture quality, which in this case is the Y/C format. Thereupon the detector 36 produces a detector signal so that the switch 12 is moved to the state in which terminals 9 and 11 are coupled to each other and switch 22 is moved to a state in which terminals 20 and 23 are coupled to each other.

Let us now assume that, starting from the initial situation in which the three devices are coupled to each other and all three of them are in operation, device 2 is switched off. The outputs 44.1 to 44.4 of the signal control generator 25 all become non-earthed now. This causes the lines 42.1 and 42.4 to carry a high voltage. The detector 36 detects that the devices 1 and 3 have the formats CVBS and MAC bb in common. The detector will now again select the format having the higher picture quality, which means that a detector signal is applied to the switches 12 and 31 so that they assume the states in which terminals 10 and 11 or 30 and 32 respectively, are coupled to each other.

In the foregoing it was assumed that the device 2 was a video recorder and device 3 a picture screen and that a CVBS video signal is generated by the device 1 and simultaneously recorded on a video recorder and visualized on the picture screen.

Switching off the device 3 means a change-over to the YIC video signal. This change-over may result in disturbances in the recording of the video signal on the video recorder. In order to avoid this result the detector 36 may comprise a "quality lock not-up" option which may be switched on by the user. Such an option means that when, for example, device 3 is switched off, which may lead to changing to a different video signal format, i.e. a video signal format having a higher picture quality, this change is counteracted. However, this does have the disadvantage of recording the video signal on the video recorder with a low picture quality although a higher picture quality is feasible.

There may also be a "quality lock not-down" option on the detector, which avoids that when device 3 is switched on the CVBS quality is changed to if a video signal having the Y/C format is recorded on the video recorder in device 2. The consequence of this is that device 3 then does not receive any usable signal.

Fig. 2 shows a second exemplary embodiment of

nal on line 4a will remain "high" in the time interval (t1, t2) in which the control signal generating device 14' generates the "acknowledge-request" signal. The device 1' is then notified that no further devices are connected to the signal bus 4' which are suitable for cooperation with the device 1' over line 4a for establishing a common video signal format. In that case the device 1' automatically changes to the lowest video signal quality. This means that the detector 36' generates a detector signal in response to which the switch 12 is moved to a state in which terminal 8 is connected to terminal 11. The device 1' then produces a CVBS signal at the output 13.

Starting from the situation in which the devices 1', 2' and 3' are coupled to each other over the signal bus 4', for example device 3' is now switched off. This implies that the signal in Fig. 3c is no longer generated. The signal on the line 4a now becomes "high" in the time intervals (t2, t3) and (t3, t4). The detectors 36' and 50 will select the video signal format having the higher signal quality. This denotes that the switches 12 and 22 retain their states as shown in Fig. 2. Thus, no change to the CVBS format is made.

Based on the initial situation in which the devices 1', 2' and 3' are coupled to each other over signal bus 4', the device 2' is now switched off. This means that in the time intervals (t3, t4) and (t5, t6) the control signal on line 4a is "high". In this case the detectors 36' and 53 will move the switches 12 and 31 to the states in which the terminals 10 and 11 are coupled together and the terminals 30 and 32 are coupled together.

Also the video system shown in Fig. 2 may have the "quality lock not-up" and/or the "quality lock not-down" option which may be switched on by the system user.

Fig. 4 diagrammatically shows an exemplary embodiment of the control signal generator 14' in the device 1' of Fig. 2. The generator 14' in Fig. 4 comprises a controller 60 applying switching signals to switches 61 and 62 and an enable signal to an "acknowledge signal" detector 63.

For generating the start signal in the time interval (t0, t1) in Fig. 3a, the controller 60 sends a switching signal over line 64 to the switch 61, causing the latter to close at instant t = t0 and sends a switching signal over line 65 to the switch 62, causing the latter to open at the instant t = t0. The signal remains present until the instant t = t4. The controller 60 again generates a switching signal on the lines 64 and 65 so that at the instant t = t4 the switch 61 opens and switch 62 closes. At the instant t = t5 the controller 60 again sends a switching signal onto the lines so that at t = t5 the switch 61 closes and switch 62 opens. At the instant t = t6 the switching signal is generated once again so that the switch 61 opens and switch 62 closes. In the time interval t1, t2 the controller 60 additionally generates an enable signal on line 66. In response to this enable signal the "acknowledge signal" detector 63 is activated for detecting in the time interval (t1, t2) whether the signal on line 4a, that is the signal at the output 43', becomes "low" due to the presence of the devices 2, and 3'. If this "low" control signal is detected by the detector 63, it will apply a detection signal to the controller 60 over the line 67. In response to this detection signal the controller 60 continues generating the switching signals for the switches 61 and 62. If the detection signal is lacking, the controller 60 will stop generating the switching signals. The controller 60 will then generate over line 68 a control signal which will be applied to the detector 36'. In response to this control signal the detector 36' will then generate a detector signal so that the switch 12 assumes the state in which the terminals 8 and 11 are coupled to each other.

Two further possible exemplary embodiments of the control signal generator 14' in the device 1' are represented in the Figs. 9a and 9b. These exemplary embodiments show much similarity to the control signal generator shown in Fig. 4. The differences are that in the exemplary embodiment represented in Fig. 9a the switch 62 is replaced with an impedance by way of a high-ohmic resistor 62'. The controller 60 does not need to generate the switching signals for the switch 62 in Fig. 4. The switching signals applied to switch 61 over line 64 are the same as those of Fig. 4.

In the exemplary embodiment of Fig. 9b the switch 61 is replaced with an electrical interconnection. The controller 60 does not need to generate the switching signals for the switch 61 in Fig. 4. The switching signals applied to switch 62 over line 65 are the same as those of Fig. 4.

Fig. 5 shows an exemplary embodiment of the control signal generator in the devices 2' or 3' in Fig. 2. The control signal generator shown in Fig. 5 represents a controller 70, a start signal detector 71 and a controllable switch 72. At the instant t = t0 the switch 72 is open. The start signal detector 71 detects the start signal generated by the control signal generator 14' of the device 1' in the time interval (t0, t1). The detector 71 then generates a detection signal to be applied to the controller 70 over the line 73. At the instant t = t1 the controller 70 then generates a switching signal to be applied to the control signal input of switch 72 over the line 74. The switch 72 then closes during the time interval (t1, t2). Hence, output 75 of the control signal generator becomes "low" (the "acknowledge signal").

If the control signal generator shown in Fig. 5 is included in the device 2', the controller 70 is yet to generate switching signals at the instants t = t2 and t = t5 for generating the signal of Fig. 3b. If the control signal generator is concerned included in the device 3', the controller 70 is yet to generate switching signals at the instants t = t3, t = t4, t = t5 and t = t6.

Fig. 6 shows by way of a Table the operation of

the detector 36' shown in Fig. 2. The left part of the Table shows any combination of first and second control signals for the four time intervals corresponding to the four signal formats, whilst the first control signal is denoted by a logic "1" and the second control signal by a logic "0". In the right part of the Table the choice of the device 1' on a certain video signal format is shown under the heading of "choice". If no "acknowledge signal" is received, the device 1' will change to the CVBS video signal as is shown on the bottom line of the Table.

Self-evidently, the operation as shown in Fig. 6 also applies to the device 1 shown in Fig. 1. Therefore, the four columns also bear the reference numbers 37.1 to 37.4 for the inputs to the detector 36 shown in Fig. 1. In the same fashion the Table shown in Fig. 7 clarifies the operation of device 2' shown in Fig. 2 and the Table in Fig. 8 the operation of the device 3' shown in Fig. 3.

From the last two lines of Fig. 7 it appears that the detector 50 is to know which of the two video signal formats, the Y/C or RGB formats, which have virtually equal quality, is to be chosen.

Fig. 10 shows a different exemplary embodiment of a video signal generating device 1" in the form of a video tuner. By means of an aerial 70 video signals transmitted by various kinds of transmitters can be received. One may think of transmitters, for example, transmitting MAC video signals and transmitters transmitting PAL video signals. Tuning the tuner to one transmitter or the other, by means of the tuning element 90, means that a MAC signal is received in one case and a PAL signal in the other. The tuner comprises a video signal detector unit 71 which can detect whether the received signal present at the output 91 of the tuning element 90 originates from a MAC transmitter or a PAL transmitter. Depending on the detected signal the detector unit produces a control signal at an output 72. This control signal is applied to control signal inputs of controllable switches 73 and 74 and to an input 75 of the control signal generator 14".

If tuner 1" is tuned to a PAL transmitter, the detector unit 71 will generate a control signal in such a way that the switches 73 and 74 assume the state different from the one shown in the diagram. The signal received through the aerial is thereby applied to the PAL processor 76 which renders the signal received from the aerial into a PAl video signal.

In response to the control signal applied to the control signal generator 14" by the detector unit 71 this generator generates at its output 77 a first control signal for PAL and/or a second control signal for MAC. Assuming that the video signal receiving device(s) connected to the video signal generating device 1" can at least receive the PAL signal, the detector 36' will present a detection signal at its output 38 so that the controllable switch 12' assumes a state so that the output 78 of the PAL processor 76 is coupled to the video signal output 13.

It is now assumed that the tuner 1" is tuned to a MAC transmitter. The detector unit 71 will generate a control signal in such a way that the switches 73 and 74 assume the states shown in the drawing Figure. This means that the signal received through the aerial is applied to the MAC processor 79 which renders the signal received through the aerial into a HAC video signal. Since the tuner 1" also comprises a MAC-PAL converter 81, the MAC video signal is available at the terminal 82 of switch 12' and the PAL video signal is available at the terminal 83 of the switch 12'. The generator 14" will now generate a first control signal for both MAC and PAL.

From this it appears that the generator 14" is capable of presenting various kinds of control signals at its output 77 depending on the tuning of the tuner 1" to a transmitter. Depending on the connected video signal receiving device(s) the detector 36' subsequently chooses the common video signal format: that is to say, MAC or PAL. In the former case the terminal 82 of switch 12' and in the latter case the terminal 83 of this switch 12' is connected to the output 13.

A different exemplary embodiment of a video signal generating device is a "transparent" video recorder. A video recorder of this type is capable of recording PAL, MAC or different kinds of video signals unmodified on a magnetic tape and also capable of reproducing them. A video recorder of this type will additionally comprise converters for converting the MAC signal, if reproduced, into a PAL or RGB signal depending on the functions of these converters.

If a magnetic tape cassette is loaded on which, for example, a PAL video signal is recorded, the video recorder will generate first and/or second control signals from which it appears that the video recorder is capable of (solely) producing a PAL video signal.

However, if a cassette is loaded on which a MAC video signal is recorded, the video recorder will generate first and/or second control signals from which it appears that the video recorder is capable of generating MAC, PAL and RG8 signals.

The control signals represented in Fig. 3 can be extended by still further information. For example, an additional time interval in the serial data stream of Fig. 3a can be reserved for indicating whether the video signal generating device is capable of generating a video signal having pictures with a 16 x 9 aspect ratio or only a video signal with the standard 4 x 3 aspect ratio. In the former case a first control signal ("high" or +V volts) is generated, in the latter case a second control signal ("low" or 0 volts). Alternatively, it is possible to reserve an additional time interval for indicating whether the audio signal belonging to the video signal is a mono signal or a stereo signal. In the former case again a first control signal ("high" or +V

volts) and in the latter case a second control signal ("low" or 0 volts) can be generated.

Furthermore, an additional time interval can be reserved for indicating whether the audio signal belonging to the video signal is for example bilingual or not. The detectors 36', 50 and 53 may further be arranged in such a way that a detector signal at the outputs 38, 52 and 53 will be arranged only after the same serial data stream of Fig. 3d recurrently present on the line has been detected a number of times, for example, five times. This may decrease the liability to disturbance. Since the signal on line 4a is "low" outside the time intervals (the time interval t0, t6 in Fig. 3) during which the control signals are recurrently transmitted, the system is compatible for future extensions of the number of possible video signal formats in the system.

Let it be assumed that the system is suitable for the four video signal formats as represented in Fig. 3. Future devices (video signal generating or video signal receiving devices) could be capable of generating or processing in excess of four video signal formats, for example a fifth video signal format. Such a new device will then produce in additional time interval t6, t7 (not shown in Fig. 3) a first control signal ("high") on the line 4a. Since the other devices in the system are not capable of generating or processing this fifth video signal, the signal on line 4a will still remain "low" during the time interval t6, t7. Although the new device is thus capable of generating or processing the video signal according to the fifth format, this device will not operate in that mode. Only after all further devices in the system have meanwhile been replaced with devices that are capable of also handling the video signal according to the fifth format will it be possible for the video signal according to the fifth format to be conveyed between the various devices.

Claims

1. Video system comprising a video signal generating device and at least one video signal receiving device and a signal bus, the video signal generating device having a video signal output for producing a video signal and the video signal receiving device having a video signal input for receiving the video signal, whilst the video signal input can be coupled to the video signal output of the video signal generating device over the signal bus, characterised in that the video signal generating device is capable of generating a video signal according to a number of x video signal formats from a number of y video signal formats, in that the video signal receiving device is suitable for receiving and processing a video signal according to a number of z video signal formats from the number of y video signal formats, in that for y it holds that $y > 1$, and for x and z it holds that $1 \leqq x \leqq y$ and $1 \leqq z \leqq y$, in that the video signal generating device comprises a control signal generator for generating a first control signal for each of the x video signal formats and/or for generating a second control signal for each of the y-x remaining video signal formats and for producing the x first and/or y-x second control signals at a control signal output of the video signal generating device, in that the video signal receiving device comprises a control signal generator for generating the first control signal for each of the z video signal formats and/or for generating the second control signal for each of the y-z remaining video signal formats and for producing the z first and/or y-z second control signals at a control signal output of the video signal receiving device, in that the control signal outputs of the video signal generating device and the video signal receiving device can be coupled to each other over the signal bus, in that the video system comprises a detector unit structured for establishing, in response to the first and/or second control signals, the p video signal formats common to the devices from the y video signal formats, in that the detector unit thereto has an input coupled to the control signal output of a device and has an output for producing for $p = 1$ a detector signal characteristic of the common video signal format and for producing for $p \geqq 2$ a detector signal that is characteristic of one of the p common video signal formats, for applying the detector signal to the devices, in that the video signal generating device is arranged for producing a video signal at its video signal output according to the common video signal format established by the detector unit in response to the detector signal, and in that the video signal receiving device is structured for adjusting the receiving device in response to the detector signal so that the video signal can be processed by the receiving device according to the video signal format determined by the detector unit.

2. Video system as claimed in Claim 1, characterised in that the detector unit is structured for producing for $p\ 2 \geqq 2$ a detector signal that is characteristic of the signal format of the p common video signal formats having the highest video signal quality.

3. Video system as claimed in Claim 1 or 2, characterised in that the detector unit is included in one of the devices, in that the output of the detector unit is coupled to a detector signal output of this device and in that the other device(s) has (have each) a detector signal input which may be coupled over the signal bus to the detector signal out-

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volts) and in the latter case a second control signal ("low" or 0 volts) can be generated.

Furthermore, an additional time interval can be reserved for indicating whether the audio signal belonging to the video signal is for example bilingual or not. The detectors 36', 50 and 53 may further be arranged in such a way that a detector signal at the outputs 38, 52 and 53 will be arranged only after the same serial data stream of Fig. 3d recurrently present on the line has been detected a number of times, for example, five times. This may decrease the liability to disturbance. Since the signal on line 4a is "low" outside the time intervals (the time interval t0, t6 in Fig. 3) during which the control signals are recurrently transmitted, the system is compatible for future extensions of the number of possible video signal formats in the system.

Let it be assumed that the system is suitable for the four video signal formats as represented in Fig. 3. Future devices (video signal generating or video signal receiving devices) could be capable of generating or processing in excess of four video signal formats, for example a fifth video signal format. Such a new device will then produce in additional time interval t6, t7 (not shown in Fig. 3) a first control signal ("high") on the line 4a. Since the other devices in the system are not capable of generating or processing this fifth video signal, the signal on line 4a will still remain "low" during the time interval t6, t7. Although the new device is thus capable of generating or processing the video signal according to the fifth format, this device will not operate in that mode. Only after all further devices in the system have meanwhile been replaced with devices that are capable of also handling the video signal according to the fifth format will it be possible for the video signal according to the fifth format to be conveyed between the various devices.

Claims

1. Video system comprising a video signal generating device and at least one video signal receiving device and a signal bus, the video signal generating device having a video signal output for producing a video signal and the video signal receiving device having a video signal input for receiving the video signal, whilst the video signal input can be coupled to the video signal output of the video signal generating device over the signal bus, characterised in that the video signal generating device is capable of generating a video signal according to a number of x video signal formats from a number of y video signal formats, in that the video signal receiving device is suitable for receiving and processing a video signal according to a number of z video signal formats from the number of y video signal formats, in that for y it holds that $y > 1$, and for x and z it holds that $1 \leqq x \leqq y$ and $1 \leqq z \leqq y$, in that the video signal generating device comprises a control signal generator for generating a first control signal for each of the x video signal formats and/or for generating a second control signal for each of the y-x remaining video signal formats and for producing the x first and/or y-x second control signals at a control signal output of the video signal generating device, in that the video signal receiving device comprises a control signal generator for generating the first control signal for each of the z video signal formats and/or for generating the second control signal for each of the y-z remaining video signal formats and for producing the z first and/or y-z second control signals at a control signal output of the video signal receiving device, in that the control signal outputs of the video signal generating device and the video signal receiving device can be coupled to each other over the signal bus, in that the video system comprises a detector unit structured for establishing, in response to the first and/or second control signals, the p video signal formats common to the devices from the y video signal formats, in that the detector unit thereto has an input coupled to the control signal output of a device and has an output for producing for $p = 1$ a detector signal characteristic of the common video signal format and for producing for $p \geqq 2$ a detector signal that is characteristic of one of the p common video signal formats, for applying the detector signal to the devices, in that the video signal generating device is arranged for producing a video signal at its video signal output according to the common video signal format established by the detector unit in response to the detector signal, and in that the video signal receiving device is structured for adjusting the receiving device in response to the detector signal so that the video signal can be processed by the receiving device according to the video signal format determined by the detector unit.

2. Video system as claimed in Claim 1, characterised in that the detector unit is structured for producing for $p\ 2 \geqq 2$ a detector signal that is characteristic of the signal format of the p common video signal formats having the highest video signal quality.

3. Video system as claimed in Claim 1 or 2, characterised in that the detector unit is included in one of the devices, in that the output of the detector unit is coupled to a detector signal output of this device and in that the other device(s) has (have each) a detector signal input which may be coupled over the signal bus to the detector signal out-

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put of said one device.

4. Video system as claimed in Claim 3, characterised in that this one device is a video signal generating device.

5. Video system as claimed in Claim 1 or 2, characterised in that the video signal generating device and the at least one video signal receiving device each comprise a detector belonging to the detector unit which detector is structured for establishing the p common video signal formats and for generating the detector signal, in that the detectors thereto have each an input coupled to the control signal output of the associated device and an output for producing for p = 1 the detector signal that is characteristic of the common signal format and for producing for $P \geq 2$ the detector signal that is characteristic of one and the same video signal format of the p common video signal formats, in that the video signal generating device is structured for producing a video signal at its video signal output in response to the detector signal of the associated detector according to the com on video signal format selected by this detector, and in that the video signal receiving device is structured for adjusting the receiving device in response to the detector signal of the associated detector in such a way that the video signal applied to its video signal input can be processed.

6. Video system as claimed in one of the preceding Claims, characterised in that the control signal outputs of the devices have each y sub-outputs whilst each of the y control signal sub-outputs of a device corresponds to one of the y video signal formats, in that each of the y control signal sub-outputs of a device can be coupled to a corresponding sub-output of the y control signal sub-outputs of the other devices over an associated signal line in the signal bus, and in that the control signal generator in a device has y outputs, each of the y outputs being coupled to an associated control signal sub-output of the device, in that the control signal generator in the video signal generating device is structured for producing the first control signal at the x outputs corresponding to the x video signal formats and/or for producing the second control signal at the y-x remaining outputs, and in that the control signal generator in the video signal generating device is structured for producing the first control signal at the z outputs corresponding to the z video signal formats and/or for producing the second control signal at the y-z remaining outputs.

7. Video system as claimed in one of the Claims 1 to 5, characterised in that the control signal generator in the video signal generating device is structured for serially generating in a specific fixed order for the y video signal formats the x first control signals for each of the x video signal formats and/or for serially generating the y-x second control signals for each of the y-x remaining video signal formats, in that the control signal generator in the video signal receiving device is structured for serially generating in the same order for the y video signal formats the z first control signals for each of the z video signal formats and/or for serially generatins the y-z- second control signals for each of the y-z remaining video signal formats, and in that an output of a control signal generator is coupled to the control signal output of the associated device.

8. Video system as claimed in one of the preceding Claims, characterised in that the first control signals are signals having a first potential and the second control signals are signals having a second potential.

9. Video system as claimed in one of the Claims 1 to 8, characterized in that the signal bus is the SCART cable known per se and in that the control signal outputs of the video signal generating device and the video signal receiving device(s) can be coupled to each other over the line number 10 in the SCART cable.

10. Video system as claimed in one of the Claims 1 to 8, characterized in that the signal bus is the SCART cable known per se and in that the control signal outputs of the video signal generating device and the video signal receiving device(s) can be coupled to each other over the line number 12 in the SCART cable.

11. Video signal generating device as defined in any of the preceding Claims, to be used in the video system as claimed in any one of the preceding Claims.

12. Video signal generating device as claimed in Claim 11, characterised in that the video signal generating device comprises the detector unit or a detector belonging to the detector unit, x ($x \geq 2$) video signal sources and controllable switching means, in that outputs of the x video signal sources are coupled to associated x inputs of the controllable switching means of which an output is coupled to the video signal output of the device, in that the output of the detector (unit) is coupled to a control signal input of the controllable switching means, and in that, in response to the detector signal of the detector (unit) applied to the control



signal input, the switching means are arranged for coupling the video signal source to the video signal output, which source is arranged for producing the video signal according to the video signal format established by the detector (unit).

13. Video signal generating device as claimed in Claim 11 or 12, to be used in a video system as claimed in Claims 7 and 8, characterised in that the control signal generator comprises a first controllable switch inserted between a first point having a first potential and the output of the control signal generator, in that for generating a first control signal at the output for one of the x video signal formats, the control signal generator is structured for establishing a connection between the first point having the first potential and the output by closing this controllable switch.

14. Video signal generating device as claimed in Claim 11, 12 or 13 to be used in a video system as claimed in Claims 7 and 8, characterised in that the control signal generator comprises a second controllable switch inserted between the output of the control signal generator and a second point having a second potential, and in that for generating a second control signal at the output for one of the y-x remaining video signal formats, the control signal generator is structured for establishing a connection between the second point having the second potential and the output by closing the second controllable switch.

15. Video signal generating device as claimed in Claim 14, insofar it depends on Claim 11 or 12, characterised in that the control signal generator further includes an impedance inserted between a first point having a first potential and the output of the control signal generator.

16. Video signal generating device as claimed in Claim 13, characterised in that the control signal generator further includes an impedance inserted between the output of the control signal generator and a second point having a second potential.

17. Video signal generating device as claimed in one of the Claims 11 to 16, characterized in that the video signal generating device comprises the detector belonging to the detector unit and in that the detector is structured for detecting for each of said x video signal formats the presence of said second control signal generated by the video signal receiving device(s), and for establishing the p video signal formats of the x video signal formats for which none of the other devices have generated said second control signal.

18. Video signal generating device as claimed in Claim 11, to be used in the video system as claimed in Claim 7, characterized in that the control signal generator is structured for recurrently generating the x first and y-x second control signals, the recurrences of these control signals lying certain time-intervals apart.

19. Video signal generating device as claimed in Claim 18, characterized in that the control signal generator is structured for generating the second control signal during the time-intervals.

20. Video signal receiving device as defined in any of the Claims 1 to 8, to be used in the video system as claimed in any one of the Claims 1 to 8.

21. Video signal receiving device as claimed in Claim 20, characterized in that the video signal receiving device comprises z ($z \geqq 2$) video signal processing units and controllable switching means, in that the video signal input is coupled to an input of the controllable switching means, in that the switching means have z outputs each coupled to an input of an associated video signal processing unit, in that the output of the detector (unit) is coupled to a control signal input of the switching means, and in that the switching means are arranged for coupling the video signal input to the input of the video signal processing unit arranged for processing the video signal according to the video signal format established by the detector (unit), in response to the detector unit signal applied to the control signal input.

22. Video signal receiving device as claimed in Claim 21, characterised in that the video signal receiving device comprises the detector unit or the detector belonging to the detector unit.

23. Video signal receiving device as claimed in Claim 20, 21 or 22, characterised in that the control signal generator comprises a controllable switch inserted between the output of the control signal generator and a point having a second potential, in that for generating said second control signal at the output for one of the y-z remaining video signal formats, the control signal generator is structured for establishing a connection between the point having said second potential and the output by closing the controllable switch.

24. Video signal receiving device as claimed in one of the Claims 20, 21, 22 or 23, characterised in that the or a video signal receiving device comprises the detector belonging to the detector unit

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and in that the detector is structured for detecting for each of the z video signal formats the presence of said second control signal generated by the video signal generating device or a different video signal receiving device (if present), and for establishing these p video signal formats from the z video signal formats for which none of the other devices have generated said second control signal.

25. Video signal receiving device as claimed in Claim 20 to be used in the video system as claimed in Claim 7 which system may comprise a video signal generating device as claimed in Claim 19, characterised in that the control signal generator is structured for generating a second control signal during the time-intervals.

Patentansprüche

1. Videosystem mit einer Videosignalerzeugungsanordnung und wenigstens einer Videosignalempfangsanordnung und einem Signalbus, wobei die Videosignalerzeugungsanordnung einen Videosignalausgang zum Erzeugen eines Videosignals und die Videosignalempfangsanordnung einen Videosignaleingang zum Empfangen des Videosignals enthalten, während der Videosignaleingang mit dem Videosignalausgang der Videosignalerzeugungsanordnung über den Signalbus gekoppelt sein kann, dadurch gekennzeichnet, daß die Videosignalerzeugungsanordnung ein Videosignal entsprechend einer Anzahl von x Videosignalformaten aus einer Anzahl von y Videosignalformaten erzeugen kann, daß die Videosignalempfangsanordnung sich zum Empfangen und Bearbeiten eines Videosignals entsprechend einer Anzahl von z Videosignalformaten aus der Anzahl von y Videosignalformaten eignet, daß für y gilt, daß $y > 1$ ist, und daß für x und z gilt, daß $1 \leq x \leq y$ und $1 \leq z \leq y$ sind, daß die Videosignalerzeugungsanordnung einen Steuersignalgenerator zum Erzeugen eines ersten Steuersignals für jedes der X Videosignalformate und/oder zum Erzeugen eines zweiten Steuersignals für jedes der y-x restlichen Videosignalformate und zum Ausgeben der x ersten und/oder y-x zweiten Steuersignale an einem Steuersignalausgang der Videosignalerzeugungsanordnung enthält, daß die Videosignalempfangsanordnung einen Steuersignalgenerator zum Erzeugen des ersten Steuersignals für jedes der Z Videosignalformate und/oder zum Erzeugen des zweiten Steuersignals für jedes der y-z restlichen Videosignalformate und zum Erzeugen der z ersten und/oder y-z zweiten Steuersignale an einem Steuersignalausgang der Videosignalempfangsanordnung enthält, daß die Steuersignalausgänge der Videosignalerzeugungsanordnung und der Videosignalempfangsanordnung über den Signalbus miteinander gekoppelt werden können, daß das Videosystem eine Detektoreinheit enthält, die in Beantwortung der ersten und/oder zweiten Steuersignale zum Erstellen der gemeinsamen p Videosignalformate für die verschiedenen Anordnungen aus den y Videosignalformaten dient, daß die Detektoreinheit dazu mit einem Eingang an den Steuersignalausgang einer Anordnung gekoppelt ist und einen Ausgang zum Erzeugen eines kennzeichnenden Detektorsignals des gemeinsamen Videosignalformats bei $p = 1$ und zum Erzeugen eines Detektorsignals bei $p \geq 2$, das kennzeichnend für eines der p gemeinsamen Videosignalformate ist, zum Zuführen des Detektorsignals an die Anordnungen enthält, daß die Videosignalerzeugungsanordnung zum Erzeugen eines Videosignals an ihrem Videosignalausgang entsprechend dem gemeinsamen Videosignal in der Erstellung von der Dektoreinheit in Beantwortung des Detektorsignals angeordnet ist, und daß die Videosignalempfangsanordnung zum Einstellen des Empfangsanordnung in Beantwortung des Detektorsignals angeordnet ist, so daß das Videosignal in der Empfangsanordnung entsprechend dem von der Detektoreinheit bestimmten Videosignalformat bearbeitet werden kann.

2. Videosystem nach Anspruch 1, dadurch gekennzeichnet, daß die Detektoreinheit zum Erzeugen eines Detektorsignals bei $p\ 2 \geq 2$ strukturiert ist, das für das Signalformat der p gemeinsamen Videosignalformate mit der höchsten Videosignalgüte bezeichnend ist.

3. Videosystem nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Detektoreinheit in eine der Anordnungen aufgenommen ist, daß der Ausgang der Detektoreinheit mit einem Detektorsignalausgang dieser Anordnung gekoppelt ist, und daß die andere(n) Anordnung(en) einen (je einen) Detektorsignaleingang hat (haben), der über den Signalbus mit dem Detektorsignalausgang der einen Anordnung gekoppelt sein kann.

4. Videosystem nach Anspruch 3, dadurch gekennzeichnet, daß diese eine Anordnung eine Videosignalerzeugungsanordnung ist.

5. Videosystem nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Videosignalerzeugungsanordnung und die wenigstens eine Videosignalempfangsanordnung je einen zur Detektoreinheit gehörenden Detektor enthalten, der zum Erstellen der gemeinsamen p Videosignalforma-

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te und zum Erzeugen des Detektorsignals strukturiert ist, daß die Detektoren dazu mit je einem Eingang mit dem Steuersignalausgang der zugeordneten Anordnung gekoppelt ist, und einen Ausgang zum Erzeugen des für das gemeinsame Signalformat bezeichnenden Detektorsignals bei p = 1 und zum Erzeugen des für einem und demselben Videosignalformat der p gemeinsamen Videosignalformate bezeichnenden Detektorsignals bei p ≧ 2 enthält, daß die Videosignalerzeugungsanordnung zum Erzeugen eines Videosignals an ihrem Videosignalausgang in Beantwortung des Detektorsignals des zugeordneten Detektors entsprechend dem von diesem Detektor gewählten gemeinsamen Videosignalformat strukturiert ist, und daß die Videosignalempfangsanordnung zum Einstellen der Empfangsanordnung in Beantwortung des Detektorsignals des zugeordneten Detektors derart strukturiert ist, daß das an ihren Videosignaleingang gelegte Videosignal bearbeitet werden kann.

6. Videosystem nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die Steuersignalausgänge der Anordnungen je y Unterausgänge enthalten, während jeder der y Steuersignal-Unterausgänge einer Anordnung einem der y Videosignalformate entspricht, daß jeder der y Steuersignal-Unterausgänge einer Anordnung mit einem entsprechenden Unterausgang der y Steuersignal-Unterausgänge der anderen Anordnungen auf einer zugeordneten Signalleitung im Signalbus gekoppelt werden kann, und daß d er Steuersignalgenerator in einer Anordnung y Ausgänge enthält, wobei jeder der y Ausgänge mit einem zugeordneten Steuersignal-Unterausgang der Anordnung gekoppelt ist, daß der Steuersignalgenerator in der Videosignalerzeugungsanordnung zum Erzeugen des ersten Steuersignals an den den x Videosignalformaten entsprechenden x Ausgängen und/oder zum Erzeugen des zweiten Steuersignals an den y-x restlichen Ausgängen strukturiert ist, und daß der Steuersignalgenerator in der Videosignalerzeugungsanordnung zum Erzeugen des ersten Steuersignals an den den z Videosignalformaten entsprechenden z Ausgängen und/oder zum Erzeugen des zweiten Steuersignals an den y-z restlichen Ausgängen strukturiert ist.

7. Videosystem nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß der Steuersignalgenerator in der Videosignalerzeugungsanordnung zum seriellen Erzeugen der x ersten Steuersignale für jedes der x Videosignalformate in einer spezifischen festen Reihenfolge für die y Videosignalformate und/oder zum seriellen Erzeugen der y-x zweiten Steuersignale für jedes der y-x restlichen Videosignalformate strukturiert ist, daß der Steuersignalgenerator in der Videosignalempfangsanordnung zum seriellen Erzeugen der z ersten Steuersignale für jedes der z Videosignalformate in derselben Reihenfolge für die y Videosignalformate und/oder zum seriellen Erzeugen der y-z zweiten Steuersignale für jedes der y-z restlichen Videosignalformate strukturiert ist, und daß ein Ausgang eines Steuersignalgenerators mit dem Steuersignalausgang der zugeordneten Anordnung gekoppelt ist.

8. Videosystem nach einem oder mehreren der vorangehenden Ansprüche, dadurch gekennzeichnet, daß die ersten Steuersignale Signale mit einem ersten Potential und die zweiten Steuersignale Signale mit einem zweiten Potential sind.

9. Videosystem nach einem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß der Signalbus das an sich bekannte SCART-Kabel ist, und daß die Steuersignalausgänge der Videosignalerzeugungsanordnung und der Videosignalempfangsanordnung(en) miteinander auf der Leitung mit der Nummer 10 im SCART-Kabel gekoppelt werden kann.

10. Videosystem nach einem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß der Signalbus das an sich bekannte SCART-Kabel ist, und daß die Steuersignalausgänge der Videosignalerzeugungsanordnung und der Videosignalempfangsanordnung(en) miteinander auf der Leitung mit der Nummer 12 im SCART-Kabel gekoppelt werden können.

11. Videosignalerzeugungsanordnung nach der Definition in einem oder mehreren der vorangehenden Ansprüche, zur Verwendung im Videosystem nach einem oder mehreren der vorangehenden Ansprüche.

12. Videosignalerzeugungsanordnung nach Anspruch 11, dadurch gekennzeichnet, daß die Videosignalerzeugungsanordnung die Detektoreinheit oder einen zur Detektoreinheit gehörenden Detektor, x (x ≧ 2) Videosignalquellen und steuerbare Schaltmittel enthält, daß Ausgänge der x Videosignalquellen mit zugeordneten x Eingängen der steuerbaren Schaltmittel gekoppelt sind, von denen ein Ausgang mit dem Videosignalausgang der Anordnung gekoppelt ist, daß der Ausgang des Detektors (der Detektoreinheit) mit einem Steuersignaleingang der steuerbaren Schaltmittel gekoppelt ist, und daß in Beantwortung des Detektorsignals des Detektors (der Detektoreinheit) an den Steuersignaleingang die

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Schaltmittel zum Koppeln der Videosignalquelle mit dem Videosignalausgang angeordnet sind, und die Quelle zum Erzeugen des Videosignals entsprechend dem vom Detektor (von der Detektoreinheit) erstellten Videosignalformat angeordnet ist.

13. Videosignalerzeugungsanordnung nach Anspruch 11 oder 12 zur Verwendung in einem Videosystem nach Anspruch 7 und 8, dadurch gekennzeichnet, daß der Steuersignalgenerator einen zwischen einem ersten Punkt mit einem ersten Potential und dem Ausgang des Steuersignalgenerators angebrachten ersten steuerbaren Schalter enthält, daß zum Erzeugen eines ersten Steuersignals am Ausgang für eines der x Videosignalformate der Steuersignalgenerator zum Herstellen einer Verbindung zwischen dem ersten Punkt mit dem ersten Potential und dem Ausgang zum Schließen dieses steuerbaren Schalters strukturiert ist.

14. Videosignalerzeugungsanordnung nach Anspruch 11, 12 oder 13 zur Verwendung in einem Videosystem nach Anspruch 7 und 8, dadurch gekennzeichnet, daß der Steuersignalgenerator einen zwischen dem Ausgang des Steuersignalgenerators und einem zweiten Punkt mit einem zweiten Potential angebrachten zweiten steuerbaren Schalter enthält, und daß zum Erzeugen eines zweiten Steuersignals am Ausgang für eines der y-x restlichen Videosignalformate der Steuersignalgenerator zum Herstellen einer Verbindung zwischen dem zweiten Punkt mit dem zweiten Potential und dem Ausgang durch das Schließen des zweiten steuerbaren Schalters strukturiert ist.

15. Videosignalerzeugungsanordnung nach Anspruch 14, sofern vom Anspruch 11 oder 12 abhängig, dadurch gekennzeichnet, daß der Steuersignalgenerator außerdem eine zwischen einem ersten Punkt mit einem ersten Potential und dem Ausgang des Steuersignalgenerators angeordnete Impedanz enthält.

16. Videosignalerzeugungsanordnung nach Anspruch 13, dadurch gekennzeichnet, daß der Steuersignalgenerator außerdem eine zwischen dem Ausgang des Steuersignalgenerators und einem zweiten Punkt mit einem zweiten Potential angebrachte Impedanz enthält.

17. Videosignalerzeugungsanordnung nach einem der Ansprüche 11 bis 16, dadurch gekennzeichnet, daß die Videosignalerzeugungsanordnung den zur Detektoreinheit gehörenden Detektor enthält, und daß der Detektor zum Detektieren des in der (den) Videosignalempfangsanordnung(en) erzeugten zweiten Steuersignals für jedes der x Videosignalformate und zum Erstellen der p Videosignalformate der x Videosignalformate strukturiert ist, für die keine der anderen Anordnungen das zweite Steuersignal erzeugt haben.

18. Videosignalerzeugungsanordnung nach Anspruch 11 zur Verwendung im Videosystem nach Anspruch 7, dadurch gekennzeichnet, daß der Steuersignalgenerator zum wiederkehrenden Erzeugen der x ersten und y-x zweiten Steuersignale strukturiert ist, wobei die Wiederholungen dieser Steuersignale bestimmte Zeitintervalle auseinanderliegen.

19. Videosignalerzeugungsanordnung nach Anspruch 18, dadurch gekennzeichnet, daß der Steuersignalgenerator zum Erzeugen des zweiten Steuersignals in den Zeitintervallen strukturiert ist.

20. Videosignalempfangsanordnung nach der Definition in einem der Ansprüche 1 bis 8 zur Verwendung im Videosystem nach einem der Ansprüche 1 bis 8.

21. Videosignalempfangsanordnung nach Anspruch 20, dadurch gekennzeichnet, daß die Videosignalempfangsanordnung z ($z \geq 2$) Videosignalverarbeitungseinheiten und steuerbare Schaltmittel enthält, daß der Videosignaleingang mit einem Eingang der steuerbaren Schaltmittel gekoppelt ist, daß die Schaltmittel mit z Ausgängen an je einen Eingang einer zugeordneten Videosignalbearbeitungseinheit gekoppelt sind, daß der Ausgang des Detektors (der Detektoreinheit) mit einem Steuersignaleingang der Schaltmittel gekoppelt ist, und daß die Schaltmittel zum Koppeln des Videosignaleingangs mit dem Eingang der Videosignalbearbeitungseinheit zum Bearbeiten des Videosignals entsprechend dem Videosignalformat angeordnet sind, daß der Detektor (die Detektoreinheit) in Beantwortung des dem Steuersignaleingang zugeführten Detektoreinheitsignals erzeugt hat.

22. Videosignalempfangsanordnung nach Anspruch 21, dadurch gekennzeichnet, daß die Videosignalempfangsanordnung die Detektoreinheit oder den der Detektoreinheit zugeordneten Detektor enthält.

23. Videosignalempfangsanordnung nach Anspruch 20, 21 oder 22, dadurch gekennzeichnet, daß der Steuersignalgenerator einen zwischen dem Ausgang des Steuersignalgenerators und einem

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Punkt mit einem zweiten Potential steuerbaren Schalter enthält, daß zum Erzeugen des zweiten Steuersignals am Ausgang für eines der y-z restlichen Videosignalformate der Steuersignalgenerator zum Herstellen einer Verbindung zwischen dem Punkt mit dem zweiten Potential und dem Ausgang durch das Schließen des steuerbaren Schalters strukturiert ist.

24. Videosignalempfangsanordnung nach einem der Ansprüche 20, 21, 22 oder 23, dadurch gekennzeichnet, daß die oder eine Videosignalempfangsanordnung den zur Detektoreinheit gehörenden Detektor enthält, und daß der Detektor zum Detektieren des zweiten in der Videosignalerzeugungsanordnung oder in einer anderen Videosignalempfangsanordnung (wenn vorhanden) erzeugten Steuersignals für jedes der z Videosignalformate und zum Erstellen dieser p Videosignalformate aus den z Videosignalformaten strukturiert ist, wenn keine der anderen Anordnungen das zweite Steuersignal erzeugt haben.

25. Videosignalempfangsanordnung nach Anspruch 20 zur Verwendung im Videosystem nach Anspruch 7, das eine Videosignalerzeugungsanordnung nach Anspruch 19 enthalten kann, dadurch gekennzeichnet, daß der Steuersignalgenerator zum Erzeugen eines zweiten Steuersignals in den Zeitintervallen strukturiert ist.

Revendications

1. Système vidéo comprenant un dispositif générateur de signaux vidéo et au moins un dispositif récepteur de signaux vidéo et un bus d'acheminement de signaux, le dispositif générateur de signaux vidéo ayant une sortie de signaux vidéo pour produire un signal vidéo et le dispositif récepteur de signaux vidéo ayant une entrée de signaux vidéo pour recevoir le signal vidéo, tandis que l'entrée de signaux vidéo peut être couplée à la sortie de signaux vidéo du dispositif générateur de signaux vidéo via le bus d'acheminement de signaux, caractérisé en ce que le dispositif générateur de signaux vidéo est à même de générer un signal vidéo selon un nombre de x formats de signaux vidéo à partir d'un nombre de y formats de signaux vidéo, que le dispositif récepteur de signaux vidéo convient pour recevoir et traiter un signal vidéo selon un nombre de z formats de signaux vidéo à partir du nombre de y formats de signaux vidéo, que pour y il s'avère que $y > 1$, et pour x et z il s'avère que $1 \leqq x \leqq y$ et $1 \leqq z \leqq y$, que le dispositif générateur de signaux vidéo comprend un générateur de signaux de commande pour générer un premier signal de commande pour chacun des x formats de signaux vidéo et/ou pour générer un deuxième signal de commande pour chacun des y-x formats de signaux vidéo restants et pour produire les x premiers et/ou les y-x deuxièmes signaux de commande à une sortie de signaux de commande du dispositif générateur de signaux vidéo, que le dispositif récepteur de signaux vidéo comprend un générateur de signaux de commande pour générer le premier signal de commande pour chacun des z formats de signaux vidéo et/ou pour générer le deuxième signal de commande pour chacun des y-z formats de signaux vidéo restants et pour produire les z premiers et/ou les y-z deuxièmes signaux de commande à une sortie de signaux de commande du dispositif récepteur de signaux vidéo, que les sorties de signaux de commande du dispositif générateur de signaux vidéo et du dispositif récepteur de signaux vidéo peuvent être couplées l'une à l'autre via le bus d'acheminement de signaux, que le système vidéo comprend une unité de détection agencée pour établir, en réaction au premier et/ou au deuxième signaux de commande, les p formats de signaux vidéo communs aux divers dispositifs à partir des y formats de signaux vidéo, que l'unité de détection prévue à cet effet comporte une entrée couplée à la sortie des signaux de commande d'un dispositif et une sortie destinée à produire pour $p = 1$ un signal de détection caractéristique du format de signal vidéo commun et à produire pour $p \geqq 2$ un signal de détection caractéristique de l'un des p formats de signaux vidéo communs, pour appliquer le signal de détection aux dispositifs, que le dispositif générateur de signaux vidéo est agencé pour produire un signal vidéo à sa sortie de signaux vidéo selon le format de signal vidéo commun établi par l'unité de détection en réaction au signal de détection, et que le dispositif récepteur de signaux vidéo est prévu pour ajuster le dispositif récepteur en réaction au signal de détection de telle manière que le signal vidéo puisse être traité par le dispositif récepteur selon le format de signal vidéo déterminé par l'unité de détection.

2. Système vidéo selon la revendication 1, caractérisé en ce que l'unité de détection est structurée pour produire pour $p \geqq 2$ un signal de détection qui est caractéristique du format de signal des p formats de signaux vidéo communs ayant la qualité de signal vidéo la plus élevée.

3. Système vidéo selon la revendication 1 ou 2, caractérisé en ce que l'unité de détection est incluse dans l'un des dispositifs, que la sortie de l'unité de détection est couplée à une sortie de signaux de détection de ce dispositif et que le ou les au-

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tres dispositifs ont chacun une entrée de signaux de détection qui peut être couplée via le bus d'acheminement de signaux à la sortie de signaux de détection dudit dispositif.

4. Système vidéo selon la revendication 3, caractérisé en ce que dudit dispositif est un dispositif générateur de signaux vidéo.

5. Système vidéo selon la revendication 1 ou 2, caractérisé en ce que le dispositif générateur de signaux vidéo et ledit au moins un dispositif récepteur de signaux vidéo comprennent chacun un détecteur appartenant à l'unité de détection, ce détecteur étant structuré pour établir les p formats de signaux vidéo communs et pour générer le signal de détection, que les détecteurs prévus à cet effet ont chacun une entrée couplée à la sortie de signaux de commande du dispositif associé et une sortie pour produire pour $p = 1$ le signal de détection qui est caractéristique du format de signal commun et pour produire pour $p \geqq 2$ le signal de détection caractéristique d'un seul et même format de signal vidéo des p formats de signaux vidéo communs, que le dispositif générateur de signaux vidéo est structuré pour produire un signal vidéo à sa sortie de signaux vidéo en réaction au signal de détection du détecteur associé dans le format de signal vidéo commun choisi par ce détecteur, et que le dispositif récepteur de signaux vidéo est structuré pour ajuster le dispositif récepteur en réaction au signal de détection du détecteur associé de telle manière que le signal vidéo appliqué à son entrée de signaux vidéo puisse être traité.

6. Système vidéo selon l'une quelconque des revendications précédentes, caractérisé en ce que les sorties de signaux de commande des dispositifs ont chacune y sous-sorties, tandis que chacune des y sous-sorties de signaux de commande d'un dispositif correspond à l'un des y formats de signaux vidéo, que chacune des y sous-sorties de signaux de commande d'un dispositif peut être couplée à une sous-sortie correspondante des y sous-sorties de signaux de commande des autres dispositifs via une ligne de signalisation associée dans le bus d'acheminement de signaux, et que le générateur de signaux de commande d'un dispositif a y sorties, chacune des y sorties étant couplée à une sous-sortie associée de signaux de commande du dispositif, que le générateur de signaux de commande du dispositif générateur de signaux vidéo est structuré pour produire le premier signal de commande aux x sorties correspondant aux x formats de signaux vidéo et/ou pour produire le deuxième signal de commande aux y-x sorties restantes, et que le générateur de signaux de commande du dispositif générateur de signaux vidéo est structuré pour produire le premier signal de commande aux z sorties correspondant aux z formats de signaux vidéo et/ou pour produire le deuxième signal de commande aux y-z sorties restantes.

7. Système vidéo selon l'une quelconque des revendications 1 à 5, caractérisé en ce que le générateur de signaux de commande du dispositif générateur de signaux vidéo est structuré pour générer en série dans un ordre fixe spécifique pour les y formats de signaux vidéo les x premiers signaux de commande pour chacun des x formats de signaux vidéo et/ou pour générer en série les y-x deuxièmes signaux de commande pour chacun des y-x formats de signaux vidéo restants, que le générateur de signaux de commande du dispositif récepteur de signaux vidéo est structuré pour générer en série dans le même ordre pour les y formats de signaux vidéo les z premiers signaux de commande pour chacun des z formats de signaux vidéo et/ou pour générer en série les y-z deuxièmes signaux de commande pour chacun des y-z formats de signaux vidéo restants, et qu'une sortie d'un générateur de signaux de commande est couplée à la sortie de signaux de commande du dispositif associé.

8. Système vidéo selon l'une quelconque des revendications précédentes, caractérisé en ce que les premiers signaux de commande sont des signaux ayant un premier potentiel et les deuxièmes signaux de commande sont des signaux ayant un deuxième potentiel.

9. Système vidéo selon l'une quelconque des revendications 1 à 8, caractérisé en ce que le bus d'acheminement de signaux est le câble SCART connu en soi et que les sorties de signaux de commande du dispositif générateur de signaux vidéo et du ou des dispositifs récepteurs de signaux vidéo peuvent être couplées l'une à l'autre via le numéro de ligne 10 dans le câble SCART.

10. Système vidéo selon l'une quelconque des revendications 1 à 8, caractérisé en ce que le bus d'acheminement de signaux est le câble SCART connu en soi et les sorties de signaux de commande du dispositif générateur de signaux vidéo et du ou des dispositifs récepteurs de signaux vidéo peuvent être couplées l'une à l'autre via le numéro de ligne 12 dans le câble SCART.

11. Dispositif générateur de signaux vidéo selon l'une quelconque des revendications précédentes, susceptible d'être utilisé dans le système vi-

déo selon l'une quelconque des revendications précédentes.

12. Dispositif générateur de signaux vidéo selon la revendication 11, caractérisé en ce que le dispositif générateur de signaux vidéo comprend l'unité de détection ou un détecteur appartenant à l'unité de détection, x ($x \geqq 2$) sources de signaux vidéo et des moyens de commutation pouvant être commandés, que des sorties des x sources de signaux vidéo sont couplées à x entrées associées des moyens de commutation pouvant être commandés dont une sortie est couplée à la sortie de signaux vidéo du dispositif, que la sortie du détecteur (unité) est couplée à une entrée de signaux de commande des moyens de commutation pouvant être commandés et, en réaction au signal de détection du détecteur appliqué à l'entrée de signaux de commande, les moyens de commutation sont agencés pour coupler la source de signaux vidéo à la sortie de signaux vidéo, ladite source étant agencée pour produire le signal vidéo dans le format de signal vidéo établi par le détecteur.

13. Dispositif générateur de signaux vidéo selon la revendication 11 ou 12, susceptible d'être utilisé dans un système vidéo selon les revendications 7 et 8, caractérisé en ce que le générateur de signaux de commande comprend un premier commutateur pouvant être commandé inséré entre un premier point ayant un premier potentiel et la sortie du générateur de signaux de commande, que pour générer un premier signal de commande à la sortie pour l'un des x formats de signaux vidéo, le générateur de signaux de commande est structuré pour établir une connexion entre le premier point ayant le premier potentiel et la sortie en fermant ce commutateur pouvant être commandé.

14. Dispositif générateur de signaux vidéo selon la revendication 11, 12 ou 13, susceptible d'être utilisé dans un système vidéo selon les revendications 7 et 8, caractérisé en ce que le générateur de signaux de commande comprend un deuxième commutateur pouvant être commandé, inséré entre la sortie du générateur de signaux de commande et un deuxième point ayant un deuxième potentiel, et que, pour générer un deuxième signal de commande de la sortie pour l'un des y-x formats de signaux vidéo restants, le générateur de signaux de commande est structuré pour établir une connexion entre le deuxième point ayant un deuxième potentiel et la sortie en fermant le deuxième commutateur pouvant être commandé.

15. Dispositif générateur de signaux vidéo selon la revendication 14, dans la mesure où elle dépend de la revendication 11 ou 12, caractérisé en ce que le générateur de signaux de commande comprend, en outre, une impédance insérée entre un premier point ayant un premier potentiel et la sortie du générateur de signaux de commande.

16. Dispositif générateur de signaux vidéo selon la revendication 13, caractérisé en ce que le générateur de signaux de commande comprend, en outre, une impédance insérée entre la sortie du générateur de signaux de commande et un deuxième point ayant un deuxième potentiel.

17. Dispositif générateur de signaux vidéo selon l'une quelconque des revendication 11 à 16, caractérisé en ce que le dispositif générateur de signaux vidéo comprend le détecteur appartenant à l'unité de détection et que le détecteur est structuré pour détecter pour chacun desdits x formats de signaux vidéo la présence dudit deuxième signal de commande généré par le ou les dispositifs récepteurs de signaux vidéo, et pour établir les p formats de signaux vidéo des x formats de signaux vidéo pour lequel aucun des autres dispositifs n'a généré ledit deuxième signal de commande.

18. Dispositif générateur de signaux vidéo selon la revendication 11, susceptible d'être utilisé dans un système vidéo selon la revendication 7, caractérisé en ce que le générateur des signaux de commande est structuré pour générer de façon récurrente les x premiers et les y-x deuxièmes signaux de commande, les récurrences de ces signaux de commande étant séparées par certains intervalles de temps.

19. Dispositif générateur de signaux vidéo selon la revendication 18, caractérisé en ce que le générateur de signaux de commande est structuré pour générer un deuxième signal de commande au cours des intervalles de temps.

20. Dispositif récepteur de signaux vidéo selon l'une quelconque des revendications 1 à 8, susceptible d'être utilisé dans le système vidéo selon l'un quelconque des revendications 1 à 8.

21. Dispositif récepteur de signaux vidéo selon la revendication 20, caractérisé en ce que le dispositif récepteur de signaux vidéo comprend z ($z \geqq 2$) unités de traitement de signaux vidéo et des moyens de commutation pouvant être commandés, que l'entrée de signaux vidéo est couplée à une entrée des moyens de commutation pouvant être commandés, que les moyens de commuta-

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tion ont z sorties dont chacune est couplée à une entrée d'une unité de traitement de signaux vidéo associée, que la sortie de du détecteur est couplée à une entrée de signaux de commande des moyens de commutation, et que les moyens de commutation sont agencés pour coupler l'entrée de signaux vidéo à l'entrée de l'unité de traitement des signaux vidéo prévue pour traiter les signaux vidéo dans le format de signal vidéo établi par le détecteur (unité), en réaction au signal de l'unité de détection appliqué à l'entrée de signaux de commande.

22. Dispositif récepteur de signaux vidéo selon la revendication 21, caractérisé en ce que le dispositif récepteur de signaux vidéo comprend l'unité de détection ou le détecteur appartenant à l'unité de détection.

23. Dispositif récepteur de signaux vidéo selon la revendication 20, 21 ou 22, caractérisé en ce que le générateur de signaux de commande comprend un commutateur pouvant être commandé inséré entre la sortie du générateur de signaux de commande et un point ayant un deuxième potentiel, que pour générer ledit deuxième signal de commande à la sortie pour l'un des y-z formats de signaux vidéo restants, le générateur de signaux de commande est structuré pour établir une connexion entre le point ayant ledit deuxième potentiel et la sortie en fermant le commutateur pouvant être commandé.

24. Dispositif récepteur de signaux vidéo selon l'une quelconque des revendications 20, 21, 22 ou 23, caractérisé en ce que le ou un dispositif récepteur de signaux vidéo comprend le détecteur appartenant à l'unité de détection et le détecteur est structuré pour détecter pour chacun des z formats de signaux vidéo, la présence dudit deuxième signal de commande généré par ledit dispositif générateur de signaux vidéo ou un dispositif récepteur de signaux vidéo différent (s'il est présent), et pour établir ces p formats de signaux vidéo à partir des z formats de signaux vidéo pour lesquels aucun des autres dispositifs n'a généré ledit deuxième signal de commande.

25. Dispositif récepteur de signaux vidéo selon la revendication 20, susceptible d'être utilisé dans le système vidéo selon la revendication 7, ledit système pouvant comprendre un dispositif générateur de signaux vidéo selon la revendication 19, caractérisé en ce que le générateur de signaux de commande est structuré pour générer un deuxième signal de commande au cours des intervalles de temps.