Pc-controlled video multiplexer

Using a *MAX498* quad, single-pole/double-throw RGB video switch, which is provided with 250MHz video buffer amplifiers, we blended the RGB signals with composite video and used differential inputs to try to increase the distance we could send the signal over 50Ω cable.

The blending or the use of differential inputs covered most of the video signal types we use. Limitations were that, with differential inputs, we could only multiplex two sets of differential composite video instead of four single-ended signals; and in composite mode we could use three lines for RGB and a composite signal, which coped with half the transmission distance.

Operation is controlled by a pc, to whose LPT1 or LPT2 ports it is connected. A QBasic program controls the output and will put the output in a high-impedance state, so that further signals may be added at the output from, for example, a number of security cameras. Data lines D_0, D_1, D_2 and D_5 at the printer are used.

Power needed is ±5V/100mA, well regulated and with the four capacitors shown to reduce noise. Use resistive matching on all cable terminations – in and out.

We have sent signals to 100m without much degradation up to 70MHz, with a 3Vpk-pk differential input; small signal bandwidth is over 259MHz.

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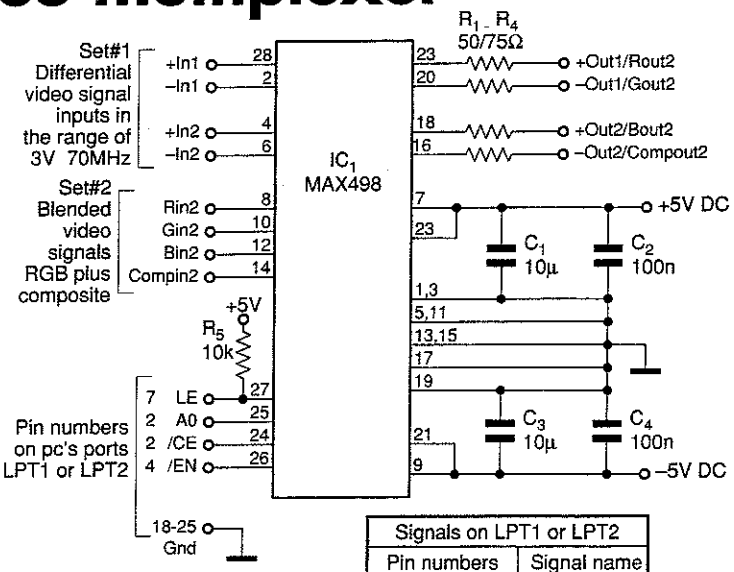

Signals on LPT1 or LPT2	
Pin numbers	Signal name
Pin2	D0
Pin3	D1
Pin4	D2
Pin7	D5
Pins 18 to 25	Ground

(A102)

Using a MAX498 to blend RGB signals with composite video or using differential inputs handles most types of video signal, signal being driven about 100m along 50/75Ω cable.

QBasic listing for the 70MHz blend multiplexer based on the MAX498.

```
        REM Base Address of LPT1 or LPT2
START:  LET BaseAddress = &H278
        REM Base address of the LPT2 port is set to 0278H
        REM Data bits on the LPT1/LP2 Parallel Port
        REM LPT port  D7   D6   D5   D4   D3   D2   D1   D0
        REM used as   x    x    LE   x    x    /EN  /CE  A0
        REM x are don't care bits
        REM ************************************************
        REM Initialize the Port Printer LPT1 or LPT2 to 026H.
INIT:   OUT BaseAddress, &H26: REM initialization completes.
        REM Condition after initialization: A0 (D0) = 0 points
        REM  to the Set#1 of the differential inputs,
        REM  MAX498 chip is disabled i.e. /CE (D1) = 1,
        REM  the output is also disabled i.e. /EN (D2) = 1,
        REM  the latch is active (high) which holds the status
        REM  i.e. LE (D5) = 1, others data bits are don't care.
        REM ************************************************
        REM Activate Set#1 differential signals at the outputs
        REM  and use the LATCHED OUTPUT control mode.
        REM  Latch enable active i.e. LE (D5) = 1. Inputs from
        REM  Set#1, i.e. A0 (D0) = 0 which selects the Set#1
        REM  of the differential inputs. /EN (D2) is set to low.
        REM  /CE is pulsed to low to strobe control signals
        REM  and must remain high.
LOUT1:  OUT BaseAddress, &H22
        OUT BaseAddress, &H20
        OUT BaseAddress, &H22
        REM The outputs are from Set#1. Differential outputs.
        REM The control inputs A0 and /EN are latched.
        REM ************************************************
        REM Activate Set#2 RGB plus composite signals at outputs
        REM  and use the LATCHED OUTPUT control mode.
        REM  Latch enable active i.e. LE (D5) = 1. Inputs from
        REM  Set#2, i.e. A0 (D0) = 1 which selects the Set#2
        REM  of the differential inputs. /EN (D2) is set to low.
        REM  /CE is pulsed to low to strobe control signals
        REM  and must remain high.
LOUT2:  OUT BaseAddress, &H23
        OUT BaseAddress, &H21
        OUT BaseAddress, &H23
        REM The outputs are from Set#2, RGBs and a composite.
        REM The control inputs A0 and /EN are latched.
        REM ************************************************
        REM Activate Set#1 differential signals at the outputs
        REM  and use the TRANSPARENT OUTPUT control mode.
        REM  Latch disabled i.e. LE (D5) = 0. Inputs from
        REM  Set#1, i.e. A0 (D0) = 0 which selects the Set#1
        REM  of the differential inputs. /EN (D2) is set to low.
        REM  /CE is pulsed to low to strobe control signals
        REM  and must remain high. However, /EN = 0 can enable
        REM  the outputs or /EN = 1 disable the outputs.
TOUT1:  OUT BaseAddress, &H02
        OUT BaseAddress, &H00
        OUT BaseAddress, &H02
        REM The outputs from Set#1 differential are now active.
        REM  /EN now can enable or disable the analog outputs.
DIS1:   OUT BaseAddress, &H06 : REM outputs disabled
ENB1:   OUT BaseAddress, &H02 : REM outputs enabled
        REM ************************************************
        REM Activate Set#2 RGB + composite at the outputs
        REM  and use the TRANSPARENT OUTPUT control mode.
        REM  Latch enable inactive i.e. LE (D5) = 0. Inputs from
        REM  Set#2, i.e. A0 (D0) = 1 which selects the Set#2
        REM  of the inputs. /EN (D2) is set to low.
        REM  /CE is pulsed to low to strobe control signals
        REM  and must remain high. However, /EN = 0 can enable
        REM  the outputs or /EN = 1 disable the outputs.
TOUT2:  OUT BaseAddress, &H03
        OUT BaseAddress, &H01
        OUT BaseAddress, &H03
        REM The outputs from Set#2 are now active.
        REM  /EN now can enable or disable the analog outputs.
DIS2:   OUT BaseAddress, &H07 : REM outputs disabled
ENB2:   OUT BaseAddress, &H03 : REM outputs enabled
```