

£100 WINNER

Analogue-to-printer port interface

Costing much less than an a-to-d card, a pair of analogue multiplexers and an a-to-d converter will connect up to 256 analogue inputs to any pc with a printer port.

A matrix formed by the analogue inputs is controlled in X and Y directions by the two 4067B multiplexers, in turn controlled by code from the computer. Firstly, the IC₂ multiplexer connects one end of the selected X input to ground, IC₁ connecting the other end to the input of the TLC548 a-to-d converter, which sends it in the form of serial binary code to the pc. Other inputs on the same Y coordinate are not connected to ground and do not affect the selected input.

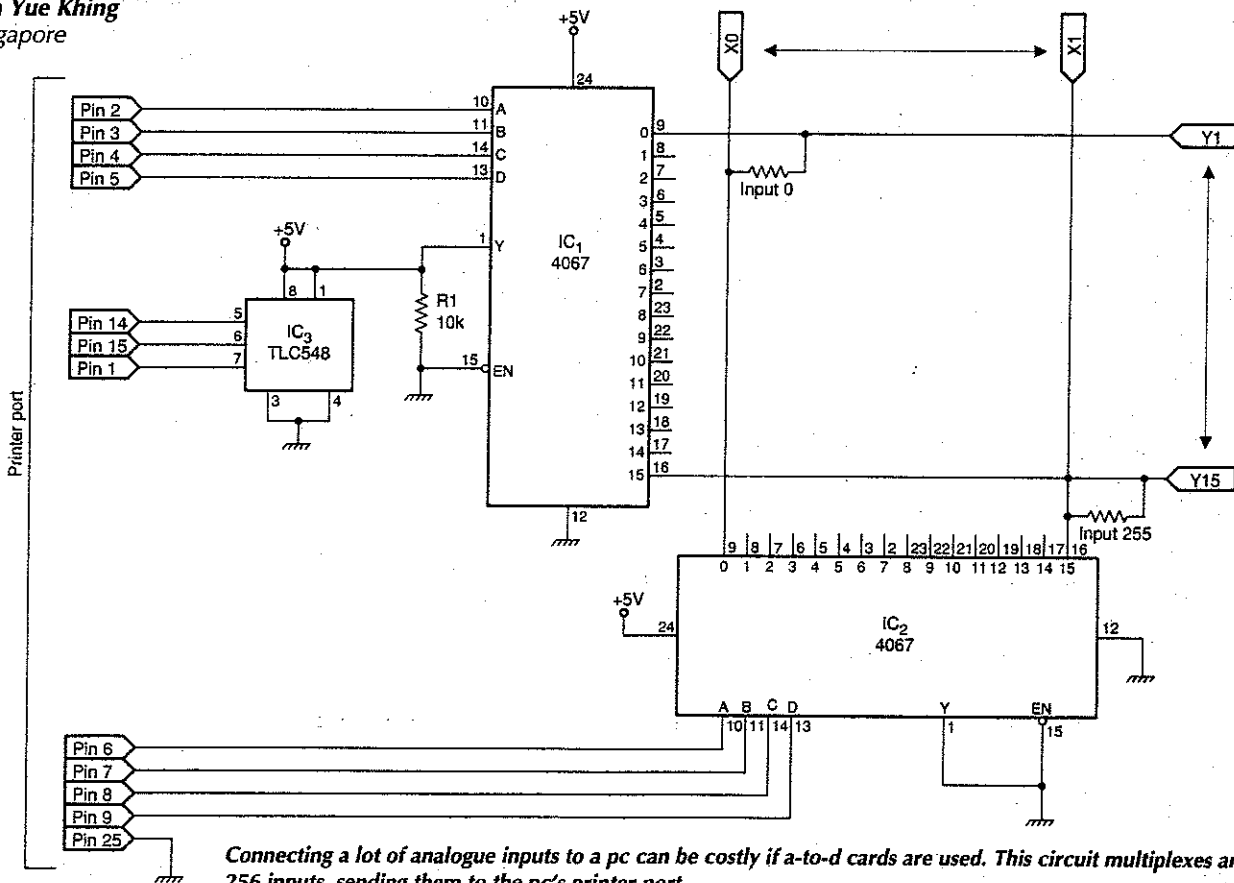
First four bits of address 378₁₆ control IC₁, the last four being for IC₂. For example, 00000000 selects X0Y0 and 00000001 selects X1Y0. On address 379₁₆, the multiplexer transmits the binary back to the computer; 37A₁₆ controls the clock and clears the converter.

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Qbasic listing for controlling the printer port analogue capture system.

```

CLS
DO
x=0
y=0
FOR x = 0 to 15
LOCATE 1,4*x+5
PRINTx
  FOR y = 0 TO 15
  PRINT y
  LOCATE 21, 21
  port=y+x* 16
  OUT &H378, port 'sent address to
                    analog multiplexer
'code for getting data for ADC
  OUT &H37A, 1 'clear the chip data
  OUT &H37A, 3 'sent a clock pulse
  OUT &H37A, 2
  a = INP(&H379) AND 8 'get the first bit
  a=a* 16
  OUT &H37A, 3
  OUT &H37A, 2
  b = INP(&H379) AND 8 'get the second bit
  b=b*8
  a=a+b
  OUT &H37A, 3
  OUT &H37A, 2
  b = INP(&H379) AND 8 'get the third bit
  b=b*4
  a=a+b
  OUT &H37A, 3
  OUT &H37A, 2
  b=INP(&H379) AND8 'get the four bit
  b=b*2
  a=a+b
  OUT &H37A, 3
  OUT &H37A, 2
  b=INP(&H379) AND 8 'get the fifth bit
  a=a+b
  OUT &H37A, 3
  OUT &H37A, 2
  b = INP(&H379) AND 8 'get the six bit
  b=b/2
  a=a+b
  OUT &H37A, 3
  OUT &H37A, 2
  b = INP(&H379) AND 8 'get the seven bit
  b=b/4
  a=a+b
  OUT &H37A, 3
  LOCATE y+2, 4*x+5
  PRINT CHR$(255); CHR$(255),
  CHR$(255); CHR$(255) 'clear
  the previous number
  LOCATE y+2, 4* x+5
  PRINT INT(a/255 * 5 * 10) / 10 'round off to 1
  decimal place
  NEXT y
NEXT x
LOOP UNTIL INKEY$ = CHR$(27) 'loop
  until "ESC" key is pressed
    
```



Connecting a lot of analogue inputs to a pc can be costly if a-to-d cards are used. This circuit multiplexes and converts 256 inputs, sending them to the pc's printer port.