

**Michael Dranfield** describes a unit that provides automatic timer-controlled switching between the outputs from two video cameras with scart output connectors



# An auto scart switcher unit

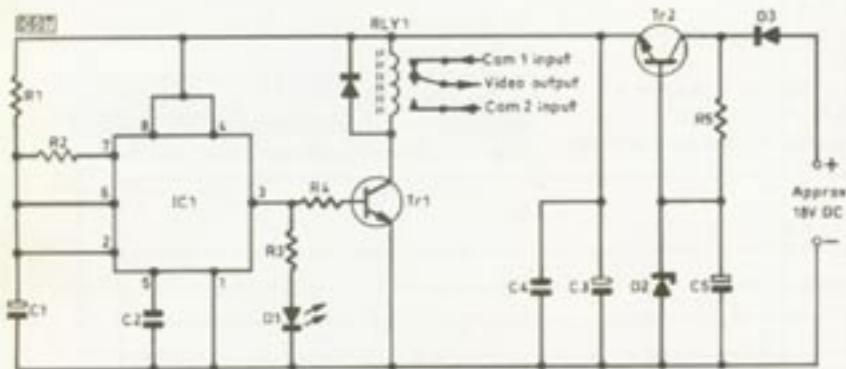


Fig. 1: Circuit diagram of the scart switcher unit. The video inputs and the output (flying lead) are all connected to pin 20 of the relevant scart connector.

**A** local dealer and good friend asked me to solve a problem for him. He had sold a couple of home security cameras, of the type with a scart output that plugs straight into a TV set, to another shopkeeper. His customer now wanted to record the outputs from the two cameras alternately. Could I come up with something that would do the job?

## Solution

After giving the matter some thought I came to the conclusion that the easiest and cheapest solution would be to build a timer and a switching circuit into a two-way scart splitter box that's available from CPC.

Space inside the splitter box is a bit tight, but there is enough just behind the cable entry point for a small PCB. By using the smallest available components, without going to surface-mounted types, this turned out to be just possible.

## Circuit description

Fig. 1 shows circuit diagram. The unit is based on an IC timer with switching provided by a changeover relay. IC1, the 555 timer chip, operates as an astable multivibrator with a 50:50 duty cycle. It drives a single-pole changeover DIL reed relay via transistor Tr1. I decided to use a relay so that when the power to the unit is switched off there is still a video loop-through from one of the camera scart sockets.

Five-second recordings were required from the two cameras alternately. The value of C1 sets this timing. If the value of C1 is doubled, the recording time will be doubled.

LED D1 across the output from IC1 provides a useful indication that the unit is in operation.

Tr1 is included so that the relay (RLY1) can be driven from the full 8.4V supply. The protection diode connected across the relay's coil is an integral part of the specified relay.

Because of the lack of space within the scart splitter box, the unit is powered by an external mains adaptor. These generally provide a poor-quality, unregulated output, so an on-board regulator (Tr2, D2) is built into the unit. The total current consumption is less than 40mA. With such a low consumption the output from an unregulated adaptor set at 12V is more likely to be about 18V.

Tr2 is a conventional series regulator, providing an output that's set by zener diode D2. The inclusion of C5 turns the circuit into an active ripple filter: the value of C5 is multiplied by the gain of the transistor. C3, which decouples the supply, is included because the 555 timer chip is notorious for producing large glitches on the supply when switching.

Although it's not shown, I included a miniature on/off switch. Power is supplied via a 3.5mm jack socket. D3 provides reverse protection: it's included to make the unit customer proof!

### Construction

I built the unit on Veroboard. After fitting the unit in the scart splitter box all you have to do is to cut the print between the scart sockets and connect the three wires from the relay.

### Sound

There's no provision for sound as this was not required. An additional relay could be connected in parallel with RLY1 to switch between camera sound outputs.

### Parts list

C1	120 $\mu$ F, 10V		
C2	0.01 $\mu$ F	146-224	
C3	22 $\mu$ F	490-842	
C4	0.01 $\mu$ F	146-224	
C5	10 $\mu$ F	105-867	
R1	51k $\Omega$	514-433	All part numbers Farnell unless otherwise stated. Farnell Electronic Components can be reached on 01132 636 311
R2	22k $\Omega$	514-342	
R3	680 $\Omega$	513-982	
R4	4.7k $\Omega$	514-184	
R5	680 $\Omega$	513-982	
D1	Green LED	621-006	
D2	9.1V zener	369-809	
D3	1N4001	365-117	
Tr1, 2	ZTX337	358-095	
IC1	NE555	409-364	
RLY1	Reed relay	103-583	

Miniature type with single-pole changeover contacts  
Twin outlet scart splitter box. From CPC, part no. AVSA4

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