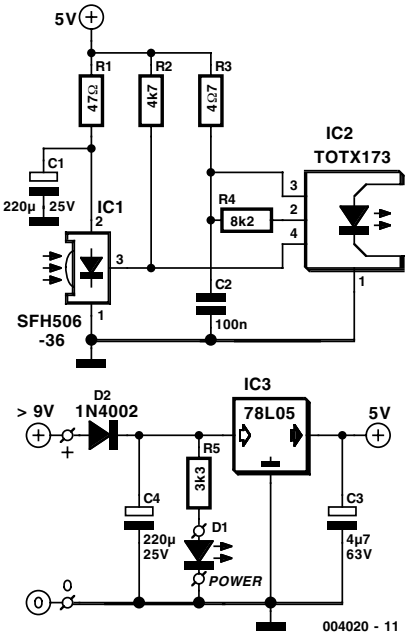
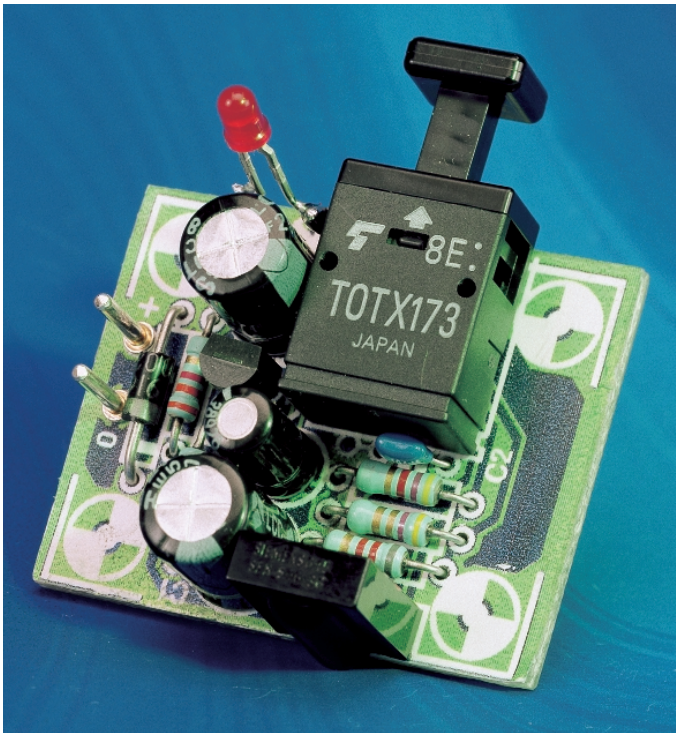
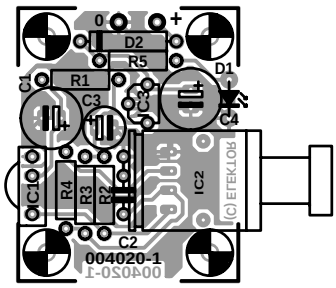
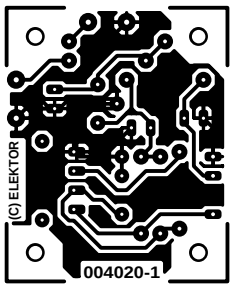
010 Receiver for Fibre-Optic IR Extender









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There are various types of remote-control extenders. Many of them use an electrical or electromagnetic link to carry the signal from one room to the next. Here we use a fibre-optic cable. The advantage of this is that the thin fibre-optic cable is easier to hide than a 75-Ω coaxial cable, for example. An optical link also does not generate any additional radiation or broadcast interference signals to the surroundings. We use Toslink modules for connecting the receiver to the transmitter. This is not the cheapest solution, but it does keep everything compact. You can use a few metres of inexpensive plastic fibre-optic cable, instead of standard optical cable for interconnecting digital audio equipment. The circuit has been tested using ten metres of inexpensive plastic fibre-optic cable between the receiver and the transmitter (which is described elsewhere in this issue).

The circuit is simplicity itself. A standard IR receiver/demodulator (IC1, an SFH506) directly drives the Toslink transmitter IC2. We have used the RC5 frequency of 36 kHz, but other standards and frequencies could also be used. Both ICs are well decoupled, in order to keep the interference to the receiver as low as possible. Since the Toslink transmitter draws a fairly large current (around 20 mA), a small mains adapter should be used as the power source.

There is a small printed circuit board layout for this circuit, which includes a standard 5-V supply with reverse polarity protection (D2). LED D1 is the power-on indicator. The supply voltage may lie between 9 and 30 V. In the absence of an IR signal, the output of IC1 is always High, and the LED in IC2 is always on. This makes it easy for the transmitter unit to detect whether the receiver unit is switched on.

The PCB shown here is unfortunately not available ready-made through the Publishers' Readers Services.

(004020-1)

COMPONENTS LIST

Resistors:
R1 = 47Ω
R2 = 4kΩ7
R3 = 4Ω7
R4 = 8kΩ2
R5 = 3kΩ3

Capacitors:
C1,C4 = 220µF 25V radial
C2 = 100nF ceramic
C3 = 4µF7 63V radial

Semiconductors:
D1 = high-efficiency LED
D2 = 1N4002
IC1 = SFH506-36 (Siemens)
IC2 = TOTX173 (Toshiba)
IC3 = 78L05