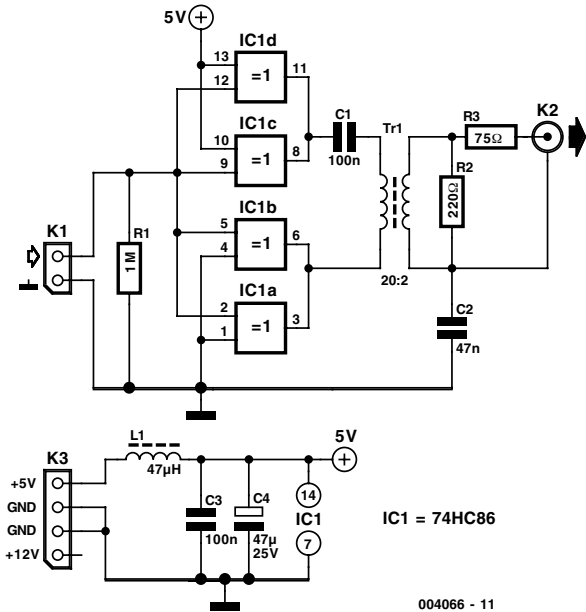
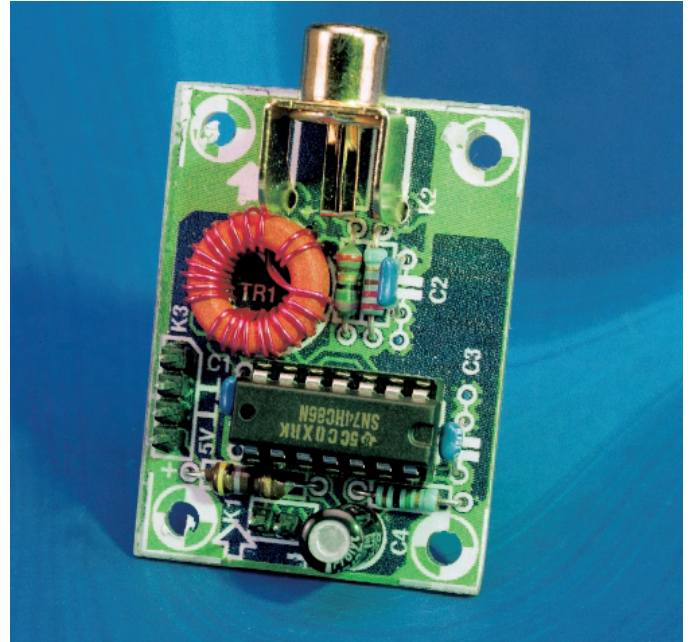


059

Coaxial S/PDIF Output



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

(004066-1)

T. Giesberts

This circuit is an alternative to the optical S/PDIF output described elsewhere in this issue. The quality of the connection provided by this link is usually better than that of an optical link (less jitter). In order to avoid earth loops, a small output transformer is normally used for digital audio signals. The construction of such a transformer has been described several times in *Elektor Electronics*. It is based on a Philips toroidal core, with 20 turns on the primary and 2 turns on the secondary, both using 0.5-mm varnished copper wire. An output signal of 0.5 V_{pp} across 75 Ω must be delivered, which means that 10 V_{pp} is necessary on the primary. This signal is provided by a quad EXOR gate (74HC86). A clean symmetrical buffer stage is created by wiring two EXORs as inverters (IC1c and IC1d) and letting the other two work without inversion (IC1a and IC1b). Using EXOR gates makes the delay times of the two buffers the same, and using two gates in parallel on each side allows more current to be delivered. R1 ensures that the gates have a defined level if there is no connection to the signal source. In the absence of an S/PDIF signal, C1 prevents a short-circuit current from flowing. R2 damps any overshoots (which mainly occur if there is no load). C2 provides an HF earth connection for the screen of the interconnecting cable. The power supply is well decoupled by L1, C3 and C4. The current consumption with a signal and load is around 4 mA, but with no S/PDIF signal it drops to zero.

COMPONENTS LIST	
Resistors: R1 = 1MΩ R2 = 220Ω R3 = 75Ω	Semiconductor: IC1 = 74HC86
Capacitors: C1, C3 = 100nF ceramic C2 = 47nF ceramic C4 = 47μF 25V radial	Miscellaneous: K1 = 2-pin SIL header K2 = cinch socket, PCB mount (e.g., Monacor/Monarch T-709G) K3 = 4-pin SIL header Tr1 = ferrite ring core Philips type TN13/7,5/5-3E25. Primary 20 turns, secondary 2 turns
Inductor: L1 = 47μH	

