

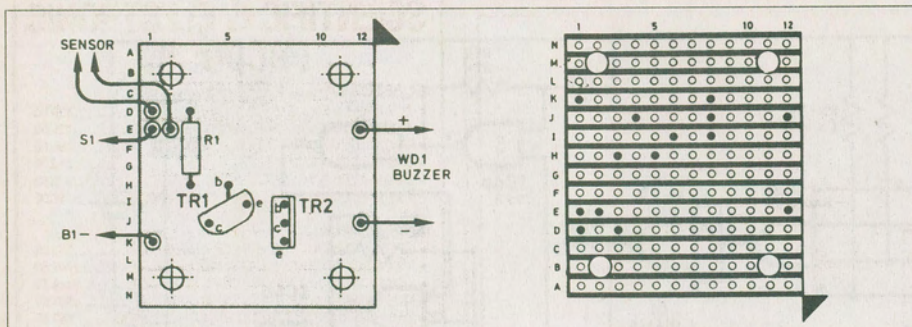


Fig. 2. The Veroboard layout, top (left) and bottom (right).

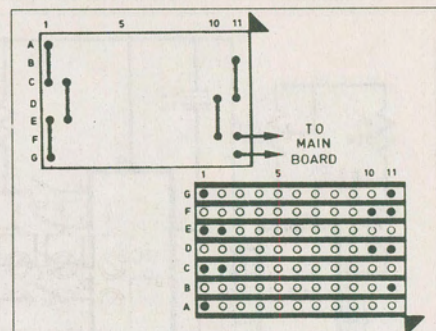


Fig. 3. Wiring of the sensor.

EXTENSION SPEAKER CONTROL

This controller is particularly useful for those who have trailers and don't want to buy a second audio system — you can use the existing car stereo without sacrificing the volume control. It has the additional advantage of a remote shut-off to prevent battery drain or cassette tapes pressed against the capstan roller.

The circuit has been designed for standard systems (up to about 5W) — it is not suitable for boosted or high-powered amplifiers. The add-on circuit draws about

50mA, a negligible drain on a car battery. With the unit disconnected, the car system is unaffected. When plugged in and switched on, control is passed to the remote unit.

The project is divided into two sections: the car system and the remote system. In the car, two DPDT relays are used for switching speakers and power (a single 3PDT relay can be used if obtainable).

With the remote on-off switch (S2) off, current cannot flow through the relay

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coils and all contacts are in their normally-closed position. Relay contact RLA1a allows a positive feed to the audio equipment from the car radio position of the ignition switch. The car speakers then operate through RLB.

With S2 switched on, the relay coils connected in parallel draw current through FS1 and the LED D2 is illuminated. R11 bypasses some current from the LED, allowing the relay coils to draw the correct current without damag-

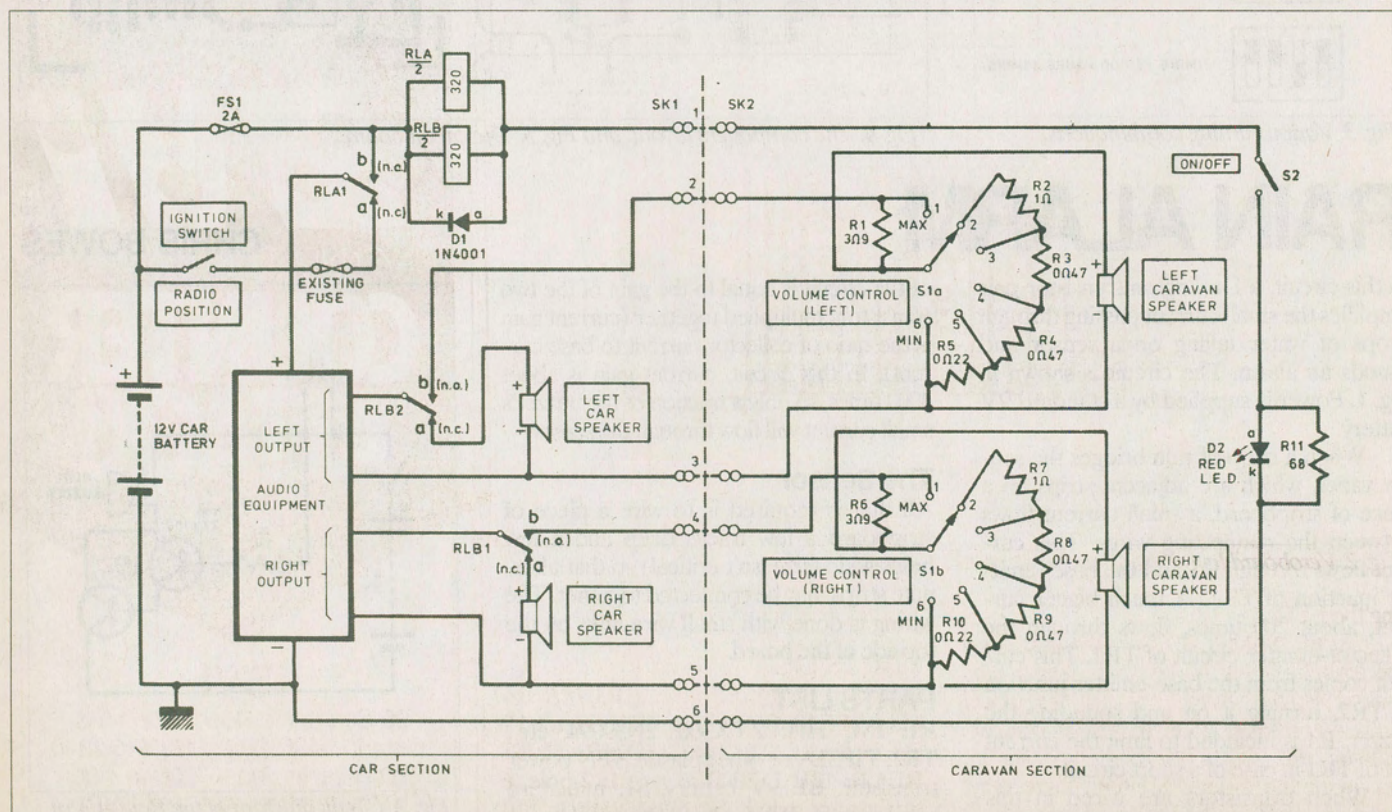


Fig. 1. Circuit diagram of the controller.

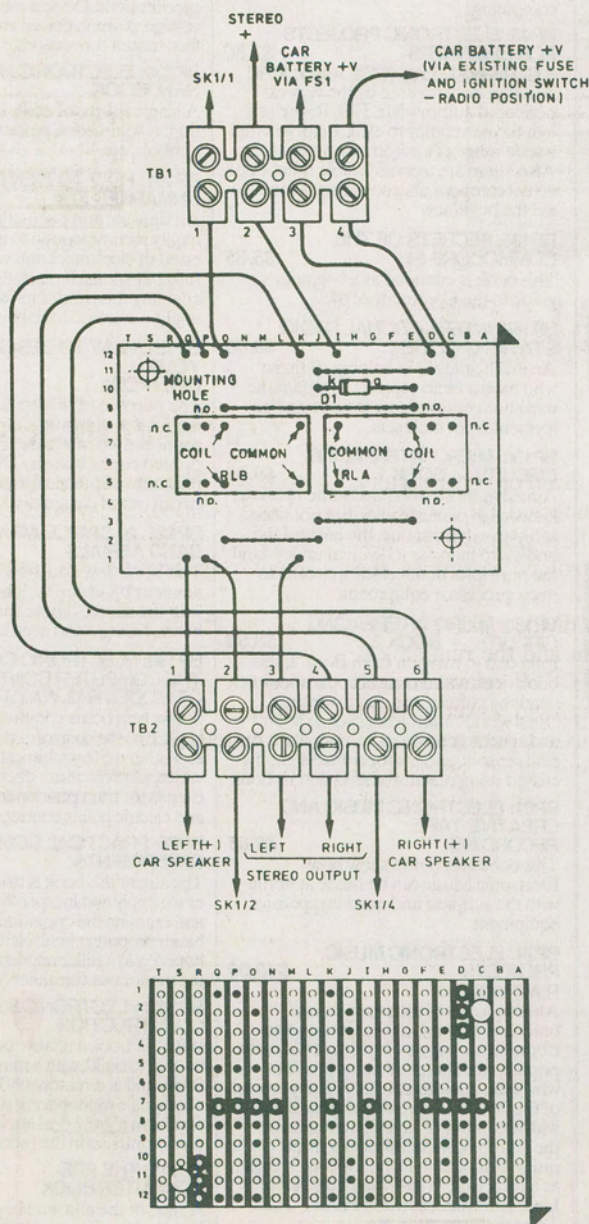


Fig. 2. Veroboard layout (top) and track breaks (bottom)

ing the LED.

In the remote, the speakers are connected to a volume control consisting of a 2-pole six-way switch. The values of resistance chosen provide a good degree of control; although the switch shorts the speaker in the minimum-volume position, there may be some slight audiodue to contact resistance. Note that if R1 or R6 are omitted, the

amplifier output could be shorted.

PARTS LIST

R1,6: 3.9 ohms, R2,7: 1 ohm, R3,4,8,9: 0.47 ohms, R5,10: 0.22 ohms, R11: 68; all 1W 5% or larger. D1: 1N4001, D2: Red LED, RLA,B: 12V DPDT relay, S1: 2-pole, 6-way rotary switch, S2: SPST switch, FS1: in-line fuseholder, 2A fuse. ■