Portable MD Remote Control Demystified

Portable MD recorders have remote controls for the most commonly used functions. The term ‘remote control’ usually refers to a wireless TV zapper, but here we are talking about a small enclosure with pushbuttons that also serves as an extension cable for the headset. At the MD recorder end, there is a phone plug for the sound and a row of contacts for other functions – including the remote control, which requires two contacts for the buttons. Each button causes a specific resistance to be connected between these two contacts, and the recorder recognises the selected function from the resistance value.

Another one of the special circuit articles in this issue describes a circuit that simplifies entering titles for the tracks on an MD, using a program running on a PC. As noted in that article, there are many differences among remote control units used by different makes, and even with the same make there can be differences among various remote controls. Still, the principle of using different resistance values remains the same for all. The schematic diagram shows how a remote control is put together.

The first thing you need to do is to find out which contacts are used to control the MD recorder. With an ohmmeter, simply measure the resistance between each possible combination of contacts while pressing a button to see if the measured value changes. When you see a change, you have found the contacts you need. One tip is to engage the Hold switch if such a switch is present on your remote control. The Hold switch shorts out the remote control contacts in order to prevent the recorder from responding to an accidentally pressed button. All you have to do then is to measure the resistances between the contact pairs using the continuity mode (beeper).

Once you have found the proper contacts, press each button in turn and record the resistance value measured for each function. Then sort the measured values in increasing order. The smallest value corresponds to R1, the next value to R1 + R2 and so on. If none of the buttons is pressed, the sum of the values of R1 through R9 will be measured. The resistor numbers correspond to those used in the schematic diagram of the MD titling circuit.

Simple AVR Programmer

H.-J. Hanft

This simple programmer is a slimmed-down version of the programmer described in the March issue. It provides an extremely low-cost entry into developing applications using AVR microcontrollers. For this reason, particular attention has been given to achieving a simple, economical design.
The programmer is connected to the PC by a standard RS232 interface. No external supply voltage is required to use the programmer, since the necessary current (a few milliampères) can be drawn directly from the serial port of the computer.

In order to reduce costs, an inexpensive fixed +5-V regulator could be used for IC1 in place of the relatively expensive LP22950 low-drop regulator. However, in that case the circuit should be powered from an external supply having a voltage in the 8–15 V range (such as a mains adapter), since the supply voltage available from the RS232 port is generally too low for reliable operation with a standard voltage regulator.

Programming activity is indicated by a red LED. The microcontroller to be programmed should not be inserted in the socket or removed from the socket while the LED is illuminated. The necessary general-purpose programming software is available as a console application suitable for use with common operating systems (Windows 95, 98, NT, ME, 2000 and XP). It can be downloaded free of charge from the Elektor Electronics website (March 2002 Free Downloads).

Phantasia on a 555 Theme

M. Feeney

The 555 timer chip is older than many Elektor readers and has been used in numerous configurations. The suggestion presented here has not been seen elsewhere by the author and has some interesting features.

The configuration for which the device was designed is the well-known $R_A-R_S-C$ one that uses the internal discharge transistor to discharge the capacitor once it has reached 2/3rd of the supply voltage, see Figure 1. The author has often used the simpler arrangement where a single (usually variable or preset) resistor R1 charges and discharges capacitor C2 from the output pin — see Figure 2. This leaves the discharge transistor free and produces a (nearly) 50:50 duty cycle that does

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