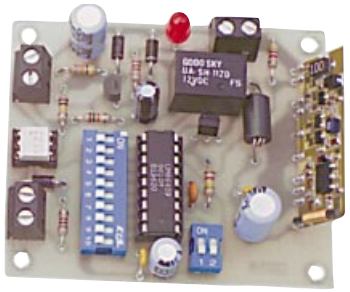
FT151

LONG DISTANCE REMOTE CONTROL TRANSMITTER (400 mW POWER)



Single channel 433,92 MHz remote control coded MM53200 (4.096 combinations) set with 12 dip-switches. Equipped with an Aurel 400 mW output hybrid RF module (TX433Boost). To be used as an alarm or long-distance remote control systems. Driving the receiver FT152, this remote control allows a transmitting distance up to 10 kilometers in open space, using suitable antennas.

CIRCUIT DESCRIPTION

The input pulse can be generated closing the built-in push-button P1 or, alternatively, applying to the point "IN" a dc voltage between 5 to 20 volts (positive goes to the terminal nearest to R1). This voltage lights on the fotodiode of FC1 and takes the internal transistor to saturation; its point 5 is then driven to ground. The divider R3/R4 drives T1 to saturation: its collector current turns on the relay RL1. When closing, RL1 feeds (via the pin 15) the encoder UM53200 (or its equivalents UM3750 or UM86409) which generates the code preset by means of the 12 dip-switches of DS1 and DS2. At the same time, RL1 feeds the transmitter module which sends to the air the coded command. The 12 dips of DS1 and DS2 allow two possible positions ("ON" = 0 level and "1" = 1 level) and any combination of them appears as a sequence of zeros and ones which conforms the control code. The integrated encoder is provided with built-in pull-up resistors.

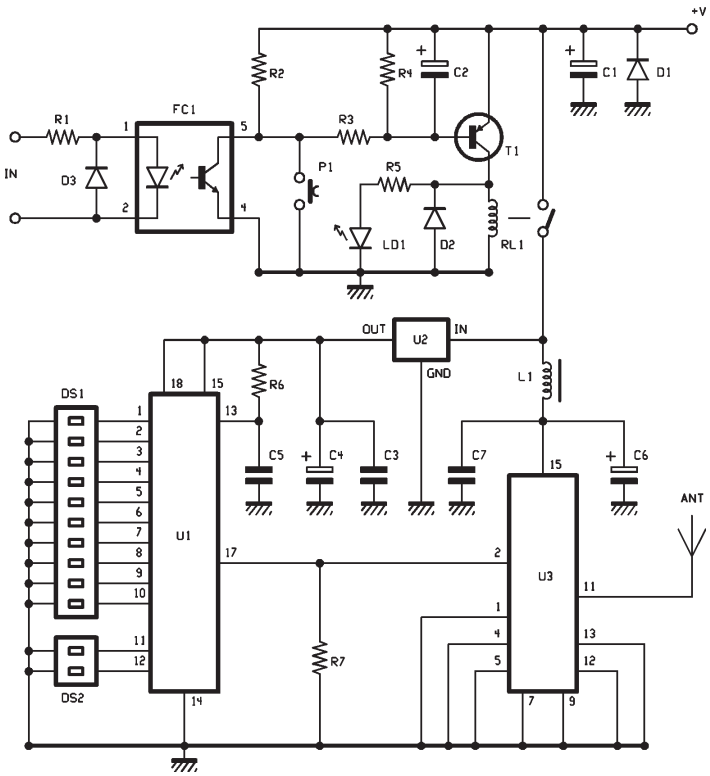
ASSEMBLY

Keep permanently the mounting diagram at sight. Start with the lowest height components: the resistors and the diodes (the bar on the diode body is the cathode and lines up with the bar in the overlay). Fit next the sockets for the I.C.'s (keep care with the notch position), the relay RL1 and the inductance L1. Mount then the capacitors and the transistor T1 (make sure that the electrolytic capacitors are inserted the correct way around: the negative is marked on the body of the capacitor). Insert now the dip-switches ("ON" means "contacts closed"; the grounded pins go facing to the opposite side from U1). Fit now the connection blocks for P1, the input signal and the line voltage, followed by the transmitter module.

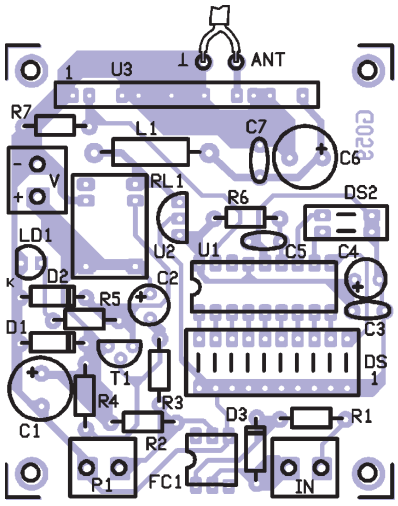
STARTING AND OPERATION

Fit carefully the encoder UM86409: the notch on it lines up with the notch on its socket. Connect the supply: any mains adaptor delivering 500 mA at 12 VDC is suitable. WARNING: The module TX433Boost can not be feed before the antenna is connected: due to the great power handling, the component can be damaged when feed unloaded. The simplest antenna is a 18 cm long copper wire (1/4 wavelength). Better results can be obtained with a "ground-plane" 1/4 wavelength antenna as the AS433, connected to the circuit via a coaxial 50 ohm cable as long as necessary. Connect the central conductor to the "ANT" central contact and the screen to ground on the printed board. Place the dip-switches of the transmitter and the receiver EXACTLY in the same position. Using a directive aerial (i.e, Yagi type) the transmitting distance may be 10 km or more. Pushing P1 or applying the specified voltage to "IN", the relay will turn on. After a short while, the output relay in the receiver will turn on as well. The signal will be transmitted all the time the excitation is on.

circuit diagram, component layout and parts list



R1: 1 Kohm
R2: 100 Kohm
R3: 15 Kohm
R4: 47 Kohm
R5: 1 Kohm
R6: 120 Kohm
R7: 4,7Kohm
C1: 470 µF 16V electrolytic
C2: 4,7 µF electrolytic
C3: 100 nF multilayer
C4: 47 µF 25V electrolytic
C5: 470 pF ceramic-disc
C6: 470 µF 16V electrolytic
C7: 100 nF multilayer
D1: 1N4007
D2: 1N4007
D3: 1N4007
LD1: Red LED 5mm
U1: UM86409 (MM53200)
U2: 78L05
U3: Module Aurel TX433 BOOST
FC1: 4N25
RL1: miniature relay 12 V
P1: Button NA
T1: BC557B
DS1: 10-way dip-switch



DS2: 2-way dip-switch
L1: VK200
ANT: 433MHz antenna

Miscellaneous:
- 2-way terminal block (3 pieces)
- 3+3 pin socket
- 9+9 pin socket
- PCB code F037