Electronic Combination Lock Circuit Using IC LS 7220

Description

This is the circuit diagram of a simple electronic combination lock using IC LS 7220. This circuit can be used to activate a relay for controlling (on & off) any device when a preset combination of 4 digits are pressed. The circuit can be operated from 5V to 12V.

To set the combination connect the appropriate switches to pin 3, 4, 5 and 6 of the IC through the header. As an example if S1 is connected to pin 3, S2 to pin 4, S3 to pin 5, S4 to pin 6 of the IC, the combination will be 1234. This way we can create any 4 digit combinations. Then connect the rest of the switches to pin 2 of IC. This will cause the IC to reset if any invalid key is pressed, and entire key code has to be re entered.

When the correct key combination is pressed the output (relay) will be activated for a preset time determined by the capacitor C1. Here it is set to be 6S. Increase C1 to increase on time. For the key pad, arrange switches in a 3X4 matrix on a PCB. Write the digits on the keys using a marker. Instead of using numbers I wrote some symbols! The bad guys will be more confused by this.
Electronic Lock Circuit Diagram:

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Pin Assignment of LS7220.

### LS 7220 PIN CONFIGURATION

#### PIN ASSIGNMENT TOP VIEW

- **SENSE IN**
- **Vss (+V)**
- **LOCK OUT**
- **CONVENIENCE DELAY**
- **SAVE IN**
- **SAVE STATUS OUT**
- **Vdd (-V)**
- **LOCK STATUS OUT**

#### SELECTED KEYS (IN SEQUENCE)
- I₁ 3
- I₂ 4
- I₃ 5
- I₄ 6

#### UN SELECTED KEYS (RESET)
- I 2
- 13

Parts List

- **C1**
  - 1 1µF 25V Electrolytic Capacitor
- **C2**
  - 1 220µF 25V Electrolytic Capacitor
- **R1**
  - 1 2.2K 1/4W Resistor
- **Q1**
  - 1 2N3904 NPN Transistor 2N2222
- **D1**
  - 1 1N4148 Rectifier Diode 1N4001-1N4007
- **K1**
  - 1 12V SPDT Relay Any appropriate relay with 12V coil
- **U1**
  - 1 LS7220 Digital Lock IC
- **S1-S12**
  - 12 SPST Momentary Pushbutton Keypad (see notes)
- **HD1**
  - 1 12 Position Header